



**FINAL**

**ENVIRONMENTAL ASSESSMENT FOR THE  
MAINTENANCE, UPGRADE, AND CONSTRUCTION OF  
THE JET FUEL DISTRIBUTION SYSTEM  
EDWARDS AIR FORCE BASE, CALIFORNIA  
(Air Force Form 813 Control Number 07-0485)**

**January 2009**

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**95th Air Base Wing  
Environmental Management Directorate  
Edwards Air Force Base, California**

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14. ABSTRACT <b>This report presents the results of the Environmental Assessment (EA), which evaluates the potential environmental effects associated with the jet fuel distribution system on Edwards Air Force Base (AFB). This EA was requested by the 95th Air Base Wing, Environmental Management Directorate at Edwards AFB, California, and was conducted by JT3/CH2M HILL, from October 2007 through January 2009. Pursuant to the National Environmental Policy Act of 1969 (NEPA), this EA has been prepared to analyze the potential environmental consequences of the proposed action. The proposed project would be an overhaul of the existing jet fuel distribution system to ensure two modes of distrubution with the option for a third at all times, then maintaining the system. The jet fuel distribution allows the flight test center to continue all flight operations and thus needs to be maintained to ensure the integral mission of EAFB as the premiere flight test center.</b>					
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# **FINDING OF NO SIGNIFICANT IMPACT FOR THE MAINTENANCE, UPGRADE, AND CONSTRUCTION OF THE JET FUEL DISTRIBUTION SYSTEM EDWARDS AIR FORCE BASE, CALIFORNIA**

## **1.0 INTRODUCTION**

The jet fuel distribution system is a series of aboveground and underground pipelines, hydrant stations, and pumping units that deliver jet propulsion fuel type 8 (JP-8), to the flightline. The system also includes aboveground storage tanks used to store excess fuel and alternative fuels. The fuel distribution system was installed in various stages from the 1960s to the 1990s. Three action alternatives are proposed to maintain and upgrade facilities with current technologies to ensure the system functions properly in delivering jet fuel without interruption.

Under Alternative A, the Proposed Action, the jet fuel distribution system would be maintained and upgraded to ensure operational efficiency and the installation of current technologies. Construction activities would include expanding of hydrant stations, removing and relocating bulk fuel storage facilities, realigning major fuel lines to remove redundancies and improve efficiencies in the system; and installing of additional storage capacity for excess fuel and alternative fuels. Projects would occur within the current footprint of the distribution system and along current pipeline easements.

Under Alternative B, current levels of maintenance, upgrades, and construction of facilities would continue and expand to adjacent properties for operational purposes.

Under Alternative C, the No Action Alternative, current levels of maintenance and upgrades of facilities would continue as discussed in Alternative A, but would occur intermittently.

## **2.0 ENVIRONMENTAL EFFECTS**

The proposed maintenance, upgrades, and construction of the jet fuel distribution system are not expected to significantly alter the productivity of the human environment. The proposed actions would be temporary in nature and not over an extended period; would be limited in scope; and would be conducted on properties clear of natural and cultural resource concerns. This environmental assessment (EA) evaluated several components of the environmental condition to determine potential impacts when implementing the proposed action alternatives. The potential impacts to the environment were evaluated and mitigation measures to minimize the effects to the environment are presented in this EA. The environmental conditions evaluated were Land Use, Air Quality, Water Resources, Safety and Occupational Health, Hazardous Materials/Waste and Solid Waste, Biological and Cultural Resources, Geology and Soils, Socioeconomics, Infrastructure, and Energy Conservation. No significant impacts were identified in any of these areas.

## **3.0 FINDINGS**

The proposed action alternatives would not constitute a major federal action affecting the quality of the human environment within the context of the *National Environmental Policy Act of*

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1969 (NEPA) (Title 42 United States Code 4321 et seq.). The environmental effects would not be significantly impacted since the proposed action alternatives would be temporary, limited in scope, and clear of natural and cultural resource concerns. Therefore, an Environmental Impact Statement for the proposed actions is not required.

A Finding of No Significant Impact (FONSI) to the environmental condition was determined based on the results of the evaluation performed for this EA. Mitigation measures are also presented that would minimize the potential impacts of the proposed action alternatives.

Copies of this FONSI, the accompanying EA, and further information concerning the proposed actions are available by contacting:

95th Air Base Wing  
Environmental Management  
Attn: Mr. Gary Hatch  
5 East Popson Avenue  
Edwards Air Force Base, California 93524-8060  
(661) 277-1454



ROBERT W. WOOD, Director  
Environmental Management

13 Jan 09

Date

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**COVER SHEET**

**ENVIRONMENTAL ASSESSMENT FOR THE  
MAINTENANCE, UPGRADE, AND CONSTRUCTION OF  
THE JET FUEL DISTRIBUTION SYSTEM  
EDWARDS AIR FORCE BASE, CALIFORNIA  
(Air Force Form 813 Control Number 07-0485)**

a. Lead Agency: U.S. Air Force

b. Cooperating Agency: None

c. Proposed Action: Maintain, upgrade, and construct facilities along the jet fuel distribution system; test and inspect the system to ensure jet fuel is distributed to the flightline without interruption. Additional storage capacity and additional distribution systems would be installed for alternate fuels.

d. Inquiries on this document should be directed to the 95th Air Base Wing Environmental Management Directorate, Attn: Gary Hatch, 5 East Popson Avenue, Edwards Air Force Base, California 93524-8060, (661) 277-1454 or e-mail: [gary.hatch@edwards.af.mil](mailto:gary.hatch@edwards.af.mil).

e. Designation: Final Environmental Assessment (EA)

f. Abstract: Pursuant to the *National Environmental Policy Act of 1969*, this EA has been prepared to analyze the potential environmental consequences of the proposed action. The proposed project would ensure facilities are able to deliver jet fuel to the flightline areas without interruption. The history of the jet fuel distribution system is one of expansion over the years to meet operational demands along the flightline. The distribution system was installed in segments with the main pipeline and bulk storage facilities constructed in the 1960s and 1970s and the hydrant station installed during the 1980s and 1990s. Periodic upgrades and replacements are required to ensure current delivery systems and technologies are installed. In addition, storage tank capacity and support facilities would be installed for alternate fuels used for base operations and flight test missions.

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### LIST OF ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
ABW	Air Base Wing
ACCS	accumulation site
ACM	asbestos-containing material
AF	Air Force
AFB	Air Force Base
AFFTC	Air Force Flight Test Center
AFFTCI	Air Force Flight Test Center Instruction
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFRL	Air Force Research Laboratory
AOC	area of concern
APCD	air pollution control district
AQMD	air quality management district
ARPA	<i>Archaeological Resources Protection Act of 1979</i>
AST	aboveground storage tank
AVAQMD	Antelope Valley Air Quality Management District
BCE	Base Civil Engineering
bgs	below ground surface
bhp	brake horsepower
BHPO	Base Historic Preservation Officer
BO	biological opinion
CAA	<i>Clean Air Act</i>
CAAA	<i>Clean Air Act Amendments</i>
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board
CCAA	<i>California Clean Air Act</i>
CCR	California Code of Regulations



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### LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

CDFG	California Department of Fish and Game
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CESA	<i>California Endangered Species Act</i>
CFR	Code of Federal Regulations
CO <sub>2</sub>	carbon dioxide
CSFM	California State Fire Marshall
CWA	<i>Clean Water Act</i>
DERP	Defense Environmental Restoration Program
DHCS	Department of Health Care Services
DOD	Department of Defense
DOT	Department of Transportation
dB	decibel
EA	environmental assessment
EA FBI	Edwards Air Force Base instruction
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	<i>Endangered Species Act of 1973</i>
FFA	Federal Facility Agreement
FOD	foreign object damage
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
H&SC	Health and Safety Code
HAZMAT	hazardous material
HLPSA	<i>Hazardous Liquid Pipeline Safety Act</i>
HMMP	Hazardous Material Management Program
HWMP	Hazardous Waste Management Plan
HWSF	Hazardous Waste Storage Facility
IAW	in accordance with
ICE	internal combustion engine
ICRMP	Integrated Cultural Resources Management Plan

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### LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

IMT	Information Management Tool
INRMP	Integrated Natural Resources Management Plan
JP-5	jet propellant type 5
JP-8	jet propulsion fuel type 8
KCAPCD	Kern County Air Pollution Control District
LBP	lead-based paint
<i>MBTA</i>	<i>Migratory Bird Treaty Act of 1918</i>
MDAQMD	Mojave Desert Air Quality Management District
MIL-HDBK	Military Handbook
MOA	Memorandum of Agreement
MSDS	material safety data sheet
MSWMP	Municipal Solid Waste Management Plan
mph	miles per hour
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NASA/DFRC	National Aeronautics Space Administration Dryden Flight Research Center
<i>NEPA</i>	<i>National Environmental Policy Act of 1969</i>
NFPA	National Fire Protection Association
<i>NHPA</i>	<i>National Historic Preservation Act of 1966</i>
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxide
NRHP	National Register of Historic Places
NSR	new source review
O <sub>3</sub>	ozone
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
OU	operable unit
PCB	polychlorinated biphenyl
PERD	Portable Equipment Registration Program
PL	Public Law
PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns
PM <sub>10</sub>	particulate matter less than or equal to 10 microns

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### LIST OF ABBREVIATIONS AND ACRONYMS (Concluded)

PPE	personal protective equipment
pH	potential of hydrogen
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RWQCB	Regional Water Quality Control Board
SARA	<i>Superfund Amendments and Reauthorization Act</i>
SIP	State Implementation Plan
SMU	stormwater management units
SO <sub>2</sub>	sulfur dioxide
SOP	standard operating procedure
SO <sub>x</sub>	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SUIPT	Space Utilization Integrated Process Team
SWDA	stormwater drainage areas
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
UBC	Uniform Building Code
UFC	Unified Facilities Criteria
UPC	Uniform Plumbing Code
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.C.	United States Code
U.S. EPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
VOC	volatile organic compound

## 1.0 INTRODUCTION

This environmental assessment (EA) evaluates potential environmental effects associated with the proposed action alternatives to maintain, upgrade, and construct along various sections of the jet fuel distribution system. Jet fuel is delivered to Edwards Air Force Base (AFB) by a series of underground pipelines and to the flightline areas through hydrant and pumping stations. Excess fuel is stored in aboveground storage tanks (ASTs) located at the bulk fuel storage tank farm in the northern part of Main Base.

Currently, jet propulsion fuel type 8 (JP-8) is delivered to the base through a pipeline at a rate of 1 million gallons per month. During major flight test and development missions, flow rates generally increase to 2.5 million gallons per month. Alternate fuels are also stored on base and include jet propellant type 5 (JP-5), gasoline, diesel, biofuel, and synthetic fuel (e.g., Fischer-Tropsch fuel). These fuels are delivered to the base by tanker trucks.

This EA is being prepared in accordance with (IAW) the requirements of the *National Environmental Policy Act of 1969 (NEPA)*, as amended (42 United States Code [U.S.C.] 4321 et seq.); Council on Environmental Quality regulations for implementing the procedural provisions of *NEPA* (40 Code of Federal Regulations [CFR] 1500–1508); Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process* (2003), which completely adopts 32 CFR 989, *Environmental Impact Analysis Process (EIAP)*; and all other applicable federal and local regulations.

### 1.1 Proposed Action

The 95th Air Base Wing (95 ABW), Civil Engineer and Transportation Directorate, Fuels Division proposes to continue maintaining, upgrading, and expanding the jet fuel distribution system to ensure facilities operate efficiently and jet fuel is distributed to the flightline without interruption. Additional storage capacity and distribution systems would also be installed for alternate fuels. These fuels would be used by aircraft, support vehicles, tactical support equipment, and flight test and development missions.

During maintenance and upgrade activities to the storage tanks and pipelines, fuels would be transferred to secondary tanks until repairs and replacements are complete. Additional fuel tank capacity would be installed to meet mission requirements. In addition, the proposed action would also continue periodic upgrades to various sections of the jet fuel distribution system and storage facilities as needed.

### 1.2 Purpose of and Need for the Proposed Action

The proposed action would ensure facilities are able to deliver jet fuel to the flightline areas without interruption. The history of the jet fuel distribution system is one of expansion over the years to meet operational demands along the flightline. The distribution system was installed in segments, with the main pipeline and bulk storage facilities constructed in the 1960s and 1970s and the hydrant stations installed during the 1980s and 1990s. Periodic upgrades and replacements are required to ensure current delivery systems and technologies are installed. In addition, storage tank capacity and support facilities would be installed for alternate fuels used for base operations and flight test missions.

### 1.3 Location and Scope of the Proposed Action

Edwards AFB is located in the Antelope Valley region of the western Mojave Desert in Southern California. It is about 60 miles northeast of Los Angeles, California. The base occupies an area of approximately 306,000 acres or 470 square miles (Figure 1).

The main jet fuel pipeline is 9 miles long and located along Lancaster Boulevard. Spur lines off the main pipeline connect hydrant stations along Wolfe Avenue on Main Base and near Jones Road on South Base. The spur lines are approximately 1 to 3 miles long. The main jet fuel storage facility is located at the bulk fuel storage tank farm in the northern part of Main Base, an area covering approximately 17 acres. The tank farm has five ASTs, with a combined storage capacity of 2.7 million gallons. Fuel storage tanks are also located at the hydrant stations with a combined storage capacity of 1.2 million gallons. A map of the jet fuel distribution system is presented in Figure 2.

This EA limits new construction, relocation, or expansion of the jet fuel distribution system to the area covered by the *Biological Opinion for Routine Operations and Facility Construction within the Cantonment Areas of Main and South Bases, Edwards Air Force Base, California* (1-6-91-F-28) (United States Fish and Wildlife Services [USFWS], 1991). Construction outside of this area, if not covered by another biological opinion (BO), would require a separate assessment to determine the biological resources in the area. The area covered by the BO is presented in Figure 3.

### 1.4 Resource Issues and Concerns

Implementation of the proposed action alternatives would potentially affect the following environmental resources: land use, air quality, water resources, safety and occupational health, hazardous materials/waste and solid waste, biological resources, cultural resources, geology and soils, socioeconomics, infrastructure, and energy conservation. The resources that would not be affected by the proposed action are presented in Section 1.4.2 of this report.

#### 1.4.1 Resource Issues and Concerns Studied in Detail

During the scoping process, the proposed action alternatives were evaluated to determine their potential impact to the environment. The environmental resources that are affected include the following:

- a. Land Use: Maintenance and construction activities near the flightline areas may create foreign object damage (FOD) material, which would be of concern to aircraft operations in the vicinity of the runways;
- b. Air Quality: Air quality would be affected by fugitive gas emissions, including greenhouse gas (GHG), from pipelines, pumps, and fueling/defueling stations during maintenance; and exhaust from construction equipment. Dust in the form of particulate matter less than or equal to 10 microns (PM10) would also be generated during soil excavation and surface grading operations;
- c. Water Resources: Excavation and surface grading along the pipeline easements could alter the natural drainage patterns. Newly exposed areas would contribute sediment to surface-water runoff during seasonal rains, causing excess sediment in the stormwater and noncompliance with the *Clean Water Act (CWA)* (33 U.S.C. 1251 et seq.);

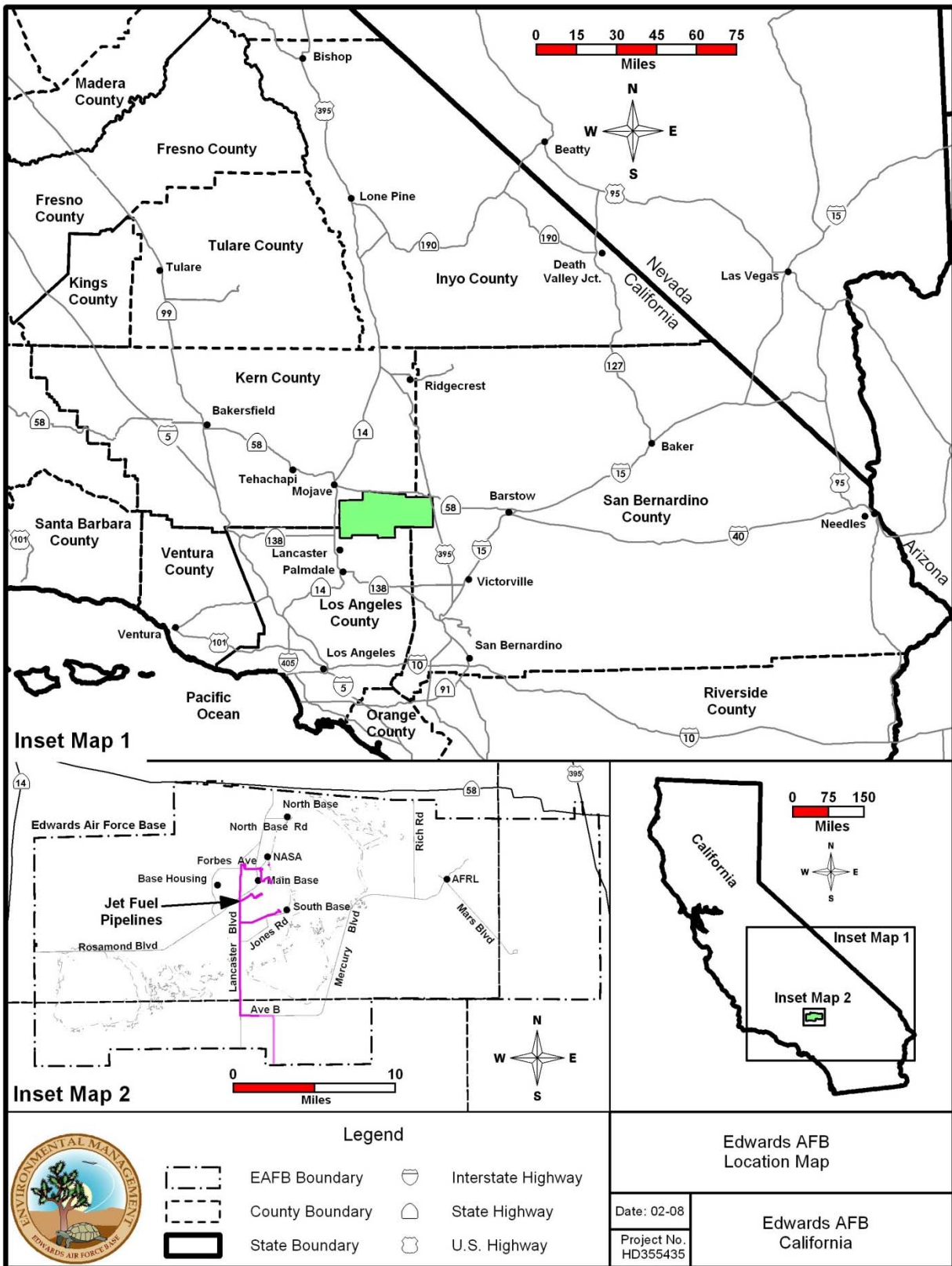


Figure 1. Location Map of Edwards AFB and the Jet Fuel Distribution System

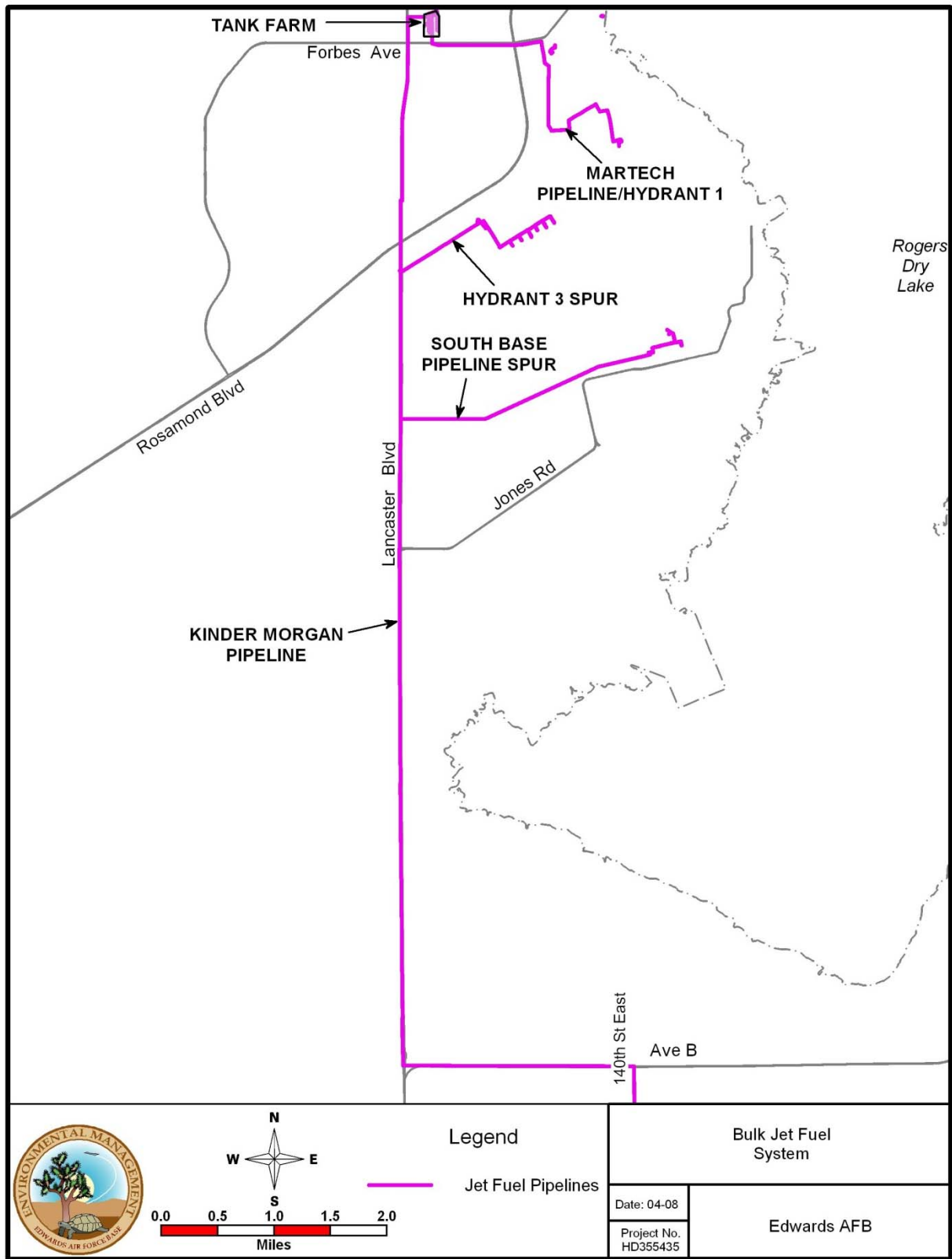


Figure 2. Map of the Jet Fuel Distribution System



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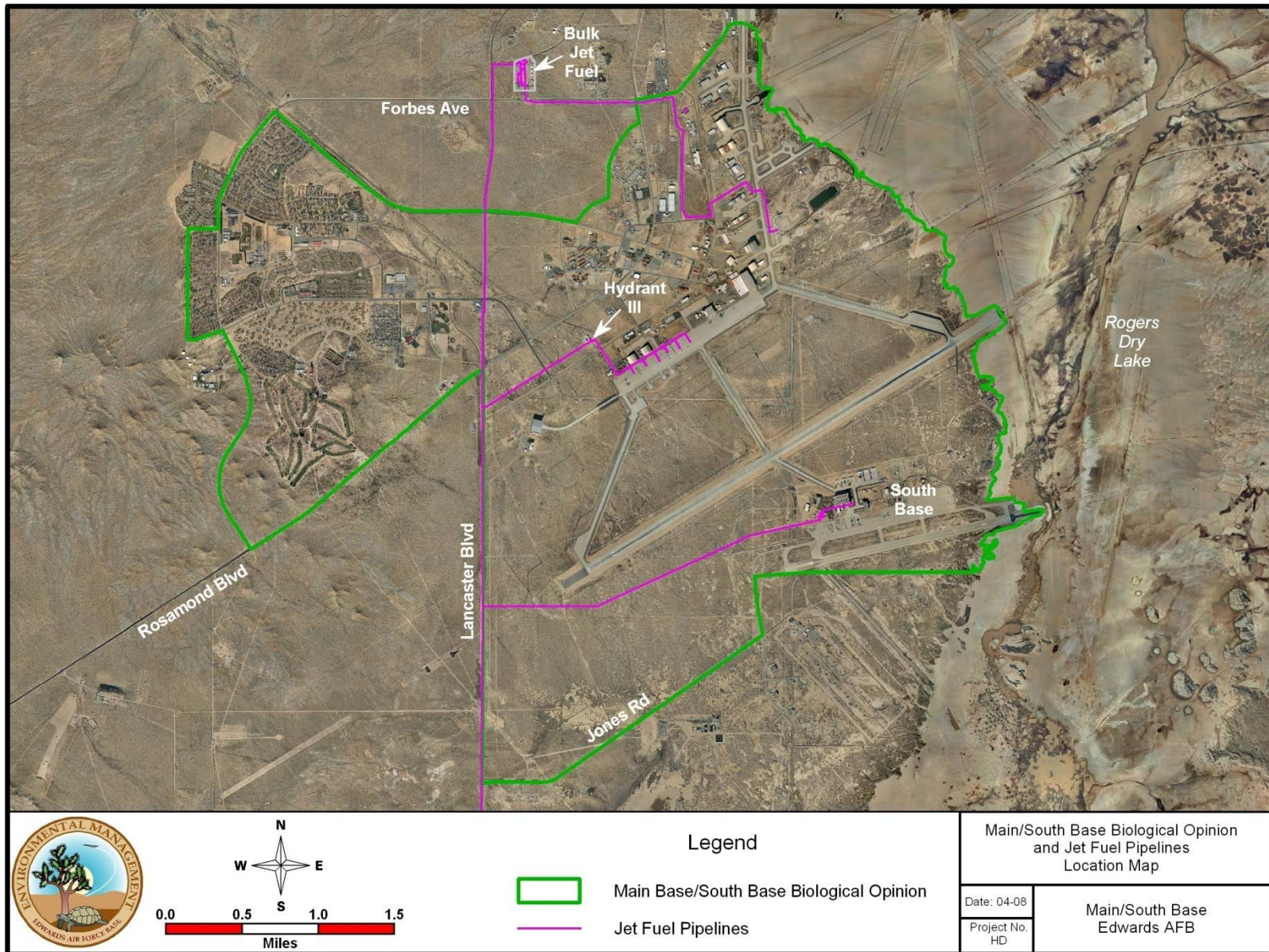


Figure 3. View of the Area Covered by the Biological Opinion for Main and South Base



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d. Safety and Occupational Health: General maintenance and testing of the jet fuel distribution system has the potential to expose field personnel to hazards and safety concerns. These include noise levels from adjacent flightline activities that exceed 85 decibels (dB); chemical hazards such as fuel vapors, heavy metal paints, and asbestos particulates; venomous snakes; and potential exposure to hantavirus or valley fever under certain environmental conditions;

e. Hazardous Materials/Waste and Solid Waste: The jet fuels delivered to the base are regulated and delivered under the *Memorandum of Agreement (MOA) between California State Fire Marshal (CSFM), Sacramento, CA and Edwards Air Force Base, CA for Liquid Fuel Supply System Services and Support* (United States Air Force [USAF], 2007). General maintenance, upgrades, and construction of the jet fuel distribution system may use hazardous materials (HAZMAT) and generate hazardous and construction wastes;

f. Biological Resources: Maintenance, upgrade, and construction of the jet fuel distribution system may have impacts to biological resources that would include disturbance to natural habitat;

g. Cultural Resources: Cultural resource sites have been identified in the vicinity of the main pipeline easement along Lancaster Boulevard and near the runways;

h. Geology and Soils: Fill material may be used to infill excavation sites or construct road bases and building pads. A geologic fault occurs in the area and has been mapped beneath the main pipeline easement. The fault is one of several mapped on base that have remained dormant in recent history. Environmental Restoration Program (ERP) sites are located in the vicinity of the jet fuel distribution system and are under various stages of remediation;

i. Socioeconomics: Construction of storage facilities and modifications to pipelines, hydrant stations, buildings and structures, concrete storage pads, and access roads are planned in 5-year budget cycles. During this period, generation of revenue for base operations and surrounding communities would be affected;

j. Infrastructure: During project activities, construction equipment and transportation of materials to and from the project site would have the potential to impact existing traffic patterns. Existing utility and communication lines could be severed and service interrupted during construction activities; and

k. Energy Conservation: The jet fuel distribution system would be updated periodically to replace outmoded equipment. The newly installed equipment would incorporate technologies designed to improve operation and energy efficiency.

### 1.4.2 Resource Issues and Concerns Eliminated from Detailed Study

Environmental Justice was eliminated from further review during the scoping process. It has been determined that this issue would not be impacted by the proposed action alternatives and has been eliminated from further evaluation in this EA.

Executive orders (EOs) on environmental justice and the protection of children require federal agencies to identify and address disproportionately high adverse effects of its activities on minority or low-income populations and children. This action has been reviewed IAW EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and EO 13045, *Protection of Children from Environmental Health and Safety Risks*. Given that

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maintenance, upgrade, and construction activities would occur entirely in designated areas of the base and away from populated areas, the Air Force has determined that this action has no substantial, disproportionate impact to minority or low-income populations and children.

### 1.5 Permits, Approvals, and Guidance

The proponent/contractor performing the work is responsible for obtaining the relevant permits and accomplishing any required notifications. Environmental permitting requirements for all work on base are coordinated through the 95 ABW, Environmental Management Directorate. The following permits and approvals would be required; however, as permitting and approval requirements change, others may be required. Guidance documents are included in this section to provide pipeline compliance information.

a. Air quality operational permits from the Kern County Air Pollution Control District (KCAPCD) would be required for powered equipment (e.g., generators, air compressors, or welders) that burns fuel and exceeds 50 brake horsepower (bhp). All portable engines and equipment with a rating of 50 bhp and greater must either have an air permit or be registered under the California Air Resources Board (CARB) Statewide Portable Equipment Registration Program. Operational air permits would be obtained prior to bringing equipment on base.

b. All in-use off-road diesel vehicles (e.g., loaders, crawler tractors, skid steers, backhoes, or forklifts) 25 horsepower or greater must meet fleet requirements, which require fleets to apply exhaust retrofits that capture pollutants before they are emitted to the air.

c. An Air Force Flight Test Center (AFFTC) Information Management Tool (IMT) 5926, *Edwards AFB Civil Engineering Work Clearance Request* (Digging Permit), is required for any trenching or digging operations that extend 12 or more inches below ground surface (bgs).

d. An AFFTC IMT 5852, *Permit for Industrial Wastewater Discharge, Edwards AFB, California*, may be required during additions to or disconnection of wastewater lines during the project activities.

e. Project activities involving welding, torching, cutting, and brazing require an Air Force (AF) Form 592, *USAF Welding, Cutting, and Brazing Permit* (Hot Work Permit), from the Fire Department.

f. Concurrence with *Memorandum of Agreement between California State Fire Marshal, Sacramento, CA and Edwards Air Force Base, CA for Liquid Fuel Supply System Services and Support* (USAF, 2007).

g. Concurrence with 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline*.

h. Concurrence with California Government Code, Title 5, Division 1, Part 1, Chapter 5.5, Section 51010–51019, *The Elder California Pipeline Safety Act of 1981*.

### 1.6 Related Environmental Documents

A number of environmental documents have been prepared and approved that address activities related to projects discussed in this EA. These documents contain information used in the preparation of this EA and are as follows:

a. *Edwards Air Force Base Energy Plan* (Base Energy Plan) (AFFTC, 1995b);

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- b. *Edwards Air Force Base General Plan* (Base General Plan) (AFFTC, 2001);
- c. *Programmatic Environmental Assessment for Small Building Construction, Relocation, and Modification at Edwards Air Force Base, California* (Small Building EA) (AFFTC, 1998a);
- d. *Integrated Natural Resources Management Plan for Edwards Air Force Base, California, Edwards AFB Plan 32-7064 (INRMP)* (Edwards AFB, 2008);
- e. *Integrated Cultural Resources Management Plan for Edwards Air Force Base, California (ICRMP)* (AFFTC, 2005);
- f. *Programmatic Environmental Assessment for Routine Flightline Activities, Edwards Air Force Base, California* (AFFTC, 1997); and
- g. *Memorandum of Agreement between California State Fire Marshall, Sacramento, CA and Edwards Air Force Base for Liquid Fuel Supply System Services and Support* (USAF, 2007).

### 1.7 Future Use of this Document

Future projects proposed for the jet fuel distribution system would be documented on an AF Form 813, *Request for Environmental Impact Analysis*, and reviewed and evaluated to determine if the project falls within the scope of this EA. If the proposed project falls within the scope of this EA, and no new environmental impacts would result, a categorical exclusion could be prepared upon submittal of the AF Form 813. In some cases, a supplement to this EA may be required. In that case, a new Finding of No Significant Impact (FONSI) would be required. For those projects that result in significant impacts to the environment, such that the impacts cannot be minimized to a level of insignificance, an Environmental Impact Statement would need to be prepared.

### 1.8 Organization of this Environmental Assessment

The organization of this EA is as follows:

- a. Section 1.0–Introduction: a description of the proposed action, the purpose and need, location and scope of the proposed action, resource issues and concerns, permits and approvals, related environmental documents, and the future use of this document;
- b. Section 2.0–Description of the Proposed Action and Alternatives: a discussion of Alternatives A (Proposed Action), B, and C (No Action Alternative); criteria for selection of a reasonable range of alternatives; alternatives considered but dismissed from further consideration; and a comparison summary of alternatives;
- c. Section 3.0–Affected Environment: a discussion of resource issues and concerns that are impacted when the proposed action alternatives are implemented;
- d. Section 4.0–Environmental Consequences: a discussion of the environmental effects and minimization measures that would be taken when implementing the proposed action alternatives. The impact of direct and indirect effects, the relationship of short-term use versus long-term productivity, and the possibility of cumulative impacts. Also discussed are the disclosure of unavoidable adverse effects and the irretrievable and irreversible commitment of resources;
- e. Section 5.0–References: a description of references cited in the document;

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f. Section 6.0–List of Preparers and Reviewers: the persons who were primarily responsible for preparing and reviewing this EA;

g. Section 7.0–List of Agencies and Organizations to Whom Copies of the Environmental Assessment Are Sent: the various agencies and organizations to whom copies of this EA are sent; and

h. Appendix A–Memorandum: Clean Air Act Conformity Statement for Control No. 07-0485, *Environmental Assessment for the Maintenance, Upgrade, and Construction of the Jet Fuel Distribution System, Edwards Air Force Base, California.*

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## 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

In order for the jet fuel distribution system to continue to function properly, it would require ongoing maintenance and upgrades. The 95 ABW, Civil Engineer and Transportation Directorate, Fuels Division, proposes to continue maintaining, upgrading, and expanding the jet fuel distribution system. This section describes Alternative A–Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action); Alternative B–Maintenance, Upgrade and Relocation of the Jet Fuel Distribution System to Adjacent Properties; and Alternative C–Continued Maintenance and Upgrades to the Jet Fuel Distribution System as Needed (No Action Alternative). In addition, it includes a brief discussion of alternatives considered but eliminated from further study, and a comparative analysis of the environmental impacts that would result from the action alternatives.

### 2.1 Alternative A–Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action)

This alternative would include the continuation of necessary and required maintenance, testing, and inspection activities; as well as upgrades and expansion of the jet fuel distribution system. Outmoded storage facilities, pipelines, and hydrant outlets would be removed and replaced with new facilities that would ensure the safe and uninterrupted distribution of fuel to the flightline areas. Storage facilities and distribution systems would also be installed for alternate fuels used in base operations, aircraft, and flight test and development missions. The proposed action would be confined to existing easements, rights-of-way, and previously disturbed areas. Projects would include, but not be limited to, the following:

- a. Operational Activities
  - (1) Transfer jet fuel from storage tanks to secondary tanks during general maintenance;
  - (2) Cleanout of storage tanks, sumps, and filtration systems;
  - (3) Repair and replace internal floating suction and calibration equipment;
  - (4) Replace and install storage tanks to meet test and development missions;
  - (5) Install storage tanks for alternate fuels;
  - (6) Remove redundancies in the jet fuel distribution system;
  - (7) Consolidate operations and maintenance facilities; and
  - (8) Install pretreatment equipment to remove fuel contaminants (e.g., sludge, sediment, and water).
- b. Maintenance Activities
  - (1) Repair containment areas;
  - (2) Repair, clean, and/or paint storage tanks;
  - (3) Repair hydrant system components (e.g., pipes, seals, valves, filters, shutoff switches, or tanks);
  - (4) Repair pump and hydrant stations; and
  - (5) Inject casing filler.

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- c. Tests/Inspection Activities
  - (1) Tank inspections;
  - (2) Visual inspection of jet fuel distribution system;
  - (3) Pressure/static pressure/hydrostatic tests;
  - (4) Leak detection tests;
  - (5) Cathodic protection tests; and
  - (6) Engineering analysis/evaluation of piping, fuel quality, and control systems.
- d. Upgrade Activities
  - (1) Install safety related equipment;
  - (2) Install/replace equipment (e.g., pipes, tanks, hydrants, pumps, and valves);
  - (3) Install fill stands, pantographs, and chilling units;
  - (4) Install/replace hydrant outlets, fuel dispensing system and emergency shutoff equipment;
  - (5) Install/replace overfill protection system;
  - (6) Install/replace cathodic protection system; and
  - (7) Relocate/install utility and communication lines.
- e. Construction Activities
  - (1) Install adequate storage capacity;
  - (2) Install pump stations and washracks;
  - (3) Complete fuel loop from Hydrant 1 to South Base;
  - (4) Construct operations and maintenance shops;
  - (5) Construct fill stands and hydrant outlets;
  - (6) Expand product recovery or pump systems;
  - (7) Demolish fuel storage tanks and buildings;
  - (8) Remove pipelines, hydrant systems, and pumps;
  - (9) Relocate and install bulk jet fuel storage tanks; and
  - (10) Construct spill containment.
- f. Associated Activities
  - (1) Establish staging areas, to include fencing or other security control measures;
  - (2) Establish access routes;
  - (3) Establish temporary construction offices; and
  - (4) Pour concrete (e.g., pads, foundations, footings).

## **2.2 Alternative B–Maintenance, Upgrade, and Relocation of the Jet Fuel Distribution System to Adjacent Properties**

This alternative would include the continuation of necessary and required maintenance, upgrades, testing, and inspections of the jet fuel distribution system. In addition to these activities, portions of the system would be relocated to adjacent properties to improve operations and increase capacity of the jet fuel distribution system. This alternative would continue activities discussed in Section 2.1 a. through f. of this document.

Upgrade projects could include the construction, relocation, or modification of buildings and similar structures greater than the small building criteria of 12,000 square feet. New fuel storage tanks, hydrant pump stations, pipelines, tank pads, and fueling/defueling stations would also be installed.

## **2.3 Alternative C–Continued Maintenance and Upgrades of the Jet Fuel Distribution System as Needed (No Action Alternative)**

The No Action Alternative is the continuation of current levels of maintenance, upgrades, testing, and inspections conducted on the existing jet fuel distribution system. These operations represent the baseline with which alternate actions are compared. Under this alternative, maintenance and upgrade activities to the existing system would continue intermittently and occur on an as-needed basis. These activities would include, but not be limited to, those described in Section 2.1 a. through d. of this document.

## **2.4 Criteria for Selection of a Reasonable Range of Alternatives**

The criteria identified in this section establish a minimum set of requirements that must be met in order for an alternative to be considered viable. Those not meeting one or more of the selection criteria have been eliminated from further discussion. The reason each was eliminated is documented in Section 2.5 of this document. Alternatives meeting all selection criteria are retained and each is fully analyzed in Section 4.0, Environmental Consequences, of this EA.

The criteria used to select the alternatives in this document are described in the following paragraphs. They address the need to comply with the following areas:

### **a. Operations**

- (1) Ensure components of the jet fuel distribution system operate efficiently;
- (2) Ensure quick turnaround times during refueling of aircraft;
- (3) Comply with the following documentation:
  - (a) CSFM MOA (USAF, 2007);
  - (b) Base Energy Plan (AFFTC, 1995b);
  - (c) Air Force Handbook 32-1084, *Facilities Requirements* (1996);
  - (d) Military Handbook (MIL-HDBK) 1022A, *Petroleum Fuel Facilities* (1999);



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(e) Edwards Air Force Base Instruction (EAFBI) 23-2, *Entry, Exit, and Control of Petroleum Transport Vehicles* (2005);

(f) Unified Facilities Criteria (UFC) 3-260-01, *DOD* (Department of Defense) *Airfield and Heliport Planning and Design* (2006);

(g) UFC 3-460-03, *Operation and Maintenance: Maintenance of Petroleum Systems* (2003); and

(h) UFC 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings* (2003).

### b. Environment

(1) Comply with the following documentation:

(a) MIL-HDBK 1008B, *Fire Protection for Facilities Engineering, Design, and Construction* (1997);

(b) 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline*; and

(c) California Government Code, Title 5, Division 1, Part 1, *Powers and Duties Common to Cities and Counties*, Chapter 5.5, Section 51010–51019, *The Elder California Pipeline Safety Act of 1981*.

(2) Ensure the jet fuel distribution system is in compliance with environmental regulations;

(3) Minimize habitat disturbance;

(4) Retain maximum amount of undisturbed areas; and

(5) Eliminate potential fuel spills and exposure to combustible fuel vapors.

### c. Economic

(1) Prevent time delays during aircraft refueling by ensuring equipment functions properly;

(2) Continue scheduled maintenance and system testing to ensure efficient and safe distribution of jet fuel;

(3) Replace and upgrade hydrant systems to improve energy efficiency and increase value; and

(4) Upgrade and replace outdated fuel storage tanks.

## 2.5 Alternatives Considered But Dismissed from Further Consideration

All alternatives are considered viable and have been retained for analysis throughout this EA.

## 2.6 Comparison Summary of Alternatives

Table 1 presents a comparison summary of the project description, location, and implementation for each alternative. Table 2 compares potential environmental impacts anticipated when the alternatives are implemented.

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**Table 1. Comparison of Alternatives**

	<b>Alternative A Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action)</b>	<b>Alternative B Maintenance, Upgrade, and Relocation of the Jet Fuel Distribution System to Adjacent Properties</b>	<b>Alternative C Continued Maintenance and Upgrades of the Jet Fuel Distribution System as Needed (No Action Alternative)</b>
<b>Project Description</b>	Conduct necessary and required maintenance, upgrades, testing, and construction of the jet fuel distribution system.	Continue maintenance, upgrades, and relocation of the jet fuel distribution system and storage to adjacent properties.	Conduct current levels of maintenance, upgrades, testing, and inspections of the jet fuel distribution system basewide on an as-needed basis.
<b>Location</b>	The jet fuel distribution system would remain in its current footprint. Some expansion along designated land use corridors would occur.	The jet fuel distribution system would remain in its current footprint with new systems installed on adjacent properties.	The jet fuel distribution system would remain in its current footprint.
<b>Project Implementation</b>	Annual costs for projects over the next 5 years are estimated between \$250,000 and \$6,000,000.	Annual costs for projects over the next 5 years are estimated between \$250,000 and \$6,000,000.	Annual costs would be less than Alternative A since projects would be conducted intermittently.

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**Table 2. Summary of the Potential Environmental Impacts\***

ENVIRONMENTAL ISSUE	ALTERNATIVE A–Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action)	ALTERNATIVE B–Maintenance, Upgrades, and Relocation of the Jet Fuel Distribution System to Adjacent Properties	ALTERNATIVE C–Continued Maintenance and Upgrades of the Jet Fuel Distribution System as Needed (No Action Alternative)
<b>LAND USE</b>			
Compatibility with the <i>Edwards Air Force Base General Plan</i> (Base General Plan) (AFFTC, 2001) and all Air Force instructions (AFIs) and regulations.	Maintenance, upgrades, expansion, and construction of the jet fuel distribution system and storage would be in areas compatible with the Base General Plan and all AFIs and regulations.	Maintenance and upgrades would continue to the jet fuels distribution system and storage in the current footprint with relocation to adjacent properties. New construction would be compatible with the Base General Plan and all AFIs and regulations. Expansion of facilities to adjacent properties would be according to the Base General Plan.	Land use would not change and would be similar to Alternative A.
Generation of foreign object damage (FOD) materials	Maintenance, upgrade, expansion, and construction activities near the flightline areas could generate FOD materials.	Continued maintenance, upgrades, and relocation of facilities to adjacent properties near the flightline areas could generate FOD materials.	Activities near the flightline areas could generate FOD materials. Generation would be less than Alternative A because activities would be intermittent.
<b>AIR QUALITY</b>			
Generation of fugitive air pollutants	Release of petroleum vapors would occur during maintenance of the jet fuel distribution system as well as from vehicles during construction activities.	Release of petroleum vapors would be similar to those under Alternative A.	Release of petroleum vapors would be less than Alternative A, since activities would be intermittent.
Generation of particulate matter less than or equal to 10 microns (PM10)	Soil from open excavations would be susceptible to wind erosion and generation of PM10 emissions.	Generation of PM10 emissions would be similar to Alternative A.	Generation of PM10 emissions would not be as extensive as Alternative A due to intermittent nature of projects.
Greenhouse gas (GHG) emissions	Release of GHG emissions from pipelines, exhaust from trucks and vehicles, and internal combustion engine (ICE) equipment would occur in the form of fugitive emissions.	Release of possible GHGs would be similar to those under Alternative A.	Release of possible GHGs would be less than Alternative A, since activities would be intermittent.
Air permit requirements for equipment equal to or greater than 50 brake horsepower (bhp)	Use of construction-related equipment with ICEs equal to or greater than 50 bhp rating (e.g., welders, generators, and compressors) would require a permit from the local air agency.	Use of construction equipment would be similar to Alternative A.	Construction equipment would be used intermittently and emissions would be less than those in Alternative A.

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**Table 2. Summary of the Potential Environmental Impacts (Continued)\***

ENVIRONMENTAL ISSUE	ALTERNATIVE A–Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action)	ALTERNATIVE B–Maintenance, Upgrade, and Relocation of the Jet Fuel Distribution System to Adjacent Properties	ALTERNATIVE C–Continued Maintenance and Upgrades of the Jet Fuel Distribution System as Needed (No Action Alternative)
<b>WATER RESOURCES</b>			
Quality of stormwater	Sediment runoff at excavation sites during rain showers could affect local drainage patterns causing exposed soil to be eroded and enter stormwater systems.	Sediment runoff at excavation sites would be similar to Alternative A.	Sediment runoff at excavation sites would be intermittent and less than Alternative A.
<b>SAFETY AND OCCUPATIONAL HEALTH</b>			
Environmental hazards	Personnel could be exposed to heat stress, venomous snakes, hantavirus from infected rodents, and valley fever from spore-containing soils.	Personnel could encounter similar environmental conditions discussed under Alternative A.	Personnel could encounter similar environmental conditions discussed under Alternative A on an intermittent basis.
Exposure to residual fuel vapors, heavy-metal paints, and soil contamination	During general maintenance, upgrades, and construction of the jet fuel distribution system, field personnel have the potential to be exposed to hazardous residual fuel vapors, heavy-metal paints, and soil contamination at Environmental Restoration Program (ERP) sites.	Field personnel could have the same potential for exposure to conditions discussed under Alternative A.	Field personnel could have the same potential for exposure to conditions discussed under Alternative A, but would occur intermittently.
Exposure to asbestos-containing materials (ACMs)	During maintenance, upgrades, and construction of the jet fuel distribution system, field personnel may be exposed to ACMs.	Field personnel could have the same potential for exposure as discussed under Alternative A.	Field personnel could have the same potential for exposure as discussed under Alternative A, but would occur intermittently.
Exposure to aircraft noise	Personnel working on the hydrant stations and pipelines may be exposed to increased noise levels generated by aircraft operations along the flightline areas. Noise that exceeds the 85-decibels level would be above acceptable levels established by Air Force Occupational Safety and Environmental Safety, Fire Protection, and Health, and federal and state Occupational Safety and Health Administration regulations.	Personnel would be exposed to similar noise levels discussed under Alternative A.	Personnel would be exposed to similar noise levels discussed under Alternative A, but intermittently.

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**Table 2. Summary of the Potential Environmental Impacts (Continued)\***

<b>ENVIRONMENTAL ISSUE</b>	<b>ALTERNATIVE A–Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action)</b>	<b>ALTERNATIVE B–Maintenance, Upgrade, and Relocation of the Jet Fuel Distribution System to Adjacent Properties</b>	<b>ALTERNATIVE C–Continued Maintenance and Upgrades of the Jet Fuel Distribution System as Needed (No Action Alternative)</b>
<b>HAZARDOUS MATERIALS/WASTE AND SOLID WASTE</b>			
Distribution of jet fuel	Flammable jet fuel, a hazardous material, is distributed in pipelines to the base and is under the operational authority of Edwards Air Force Base.	Flammable jet fuel is distributed in pipelines to the base as discussed under Alternative A.	Flammable jet fuel is distributed in pipelines to the base as discussed under Alternative A.
Generation of hazardous waste	Residual waste fuel, ACMs, lead-based paint, and other hazardous waste may be generated during maintenance, upgrades, and demolition of facilities.	Hazardous waste may be generated similar to those discussed in Alternative A.	Hazardous waste maybe generated similar to Alternative A, but would occur intermittently.
Generation of solid waste	Maintenance, upgrade, and construction projects would generate solid waste.	Maintenance, upgrade, and expansion projects would generate solid waste similar to Alternative A.	Intermittent maintenance and construction projects would generate solid waste, but the amount would be less than Alternative A.
<b>BIOLOGICAL RESOURCES</b>			
Effects to biological resources	Biological resources habitat could be disturbed during maintenance, upgrades, and construction along the jet fuel distribution system.	Potential for biological resources habitat to be disturbed is greater than under Alternative A.	Biological resources habitat could be disturbed similar to Alternative A, but intermittently.
<b>CULTURAL RESOURCES</b>			
Effects to cultural resources	Cultural resources sites could be disturbed during maintenance, upgrades, and construction of the jet fuel distribution system.	Potential for cultural resources sites to be disturbed is greater than those described under Alternative A.	Cultural resources sites could be disturbed as described under Alternative A
<b>GEOLOGY AND SOILS</b>			
Fill material use	Fill material could be used to infill excavations, for road alignments, or for building pads during maintenance, upgrade, or construction projects.	Fill material could be used in similar ways discussed under Alternative A.	Fill material could be used in lesser amounts due to the intermittent nature of projects. The manner in which fill material would be used is similar to Alternative A.
Geological fault in the area	An extension of the Mirage Valley Fault is mapped in the area of the main jet fuel pipeline. The fault is seismically dormant and no surface displacement has occurred in recent history.		
ERP equipment disturbance	Field equipment at ERP sites could be disturbed during construction activities.	Field equipment at ERP sites could be impacted similarly to Alternative A.	Field equipment at ERP sites could be disturbed periodically as projects would be conducted as needed.

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**Table 2. Summary of the Potential Environmental Impacts (Concluded)\***

<b>ENVIRONMENTAL ISSUE</b>	<b>ALTERNATIVE A–Maintenance, Upgrade, Expansion, and Construction of the Jet Fuel Distribution System (Proposed Action)</b>	<b>ALTERNATIVE B–Maintenance, Upgrade, and Relocation of the Jet Fuel Distribution System to Adjacent Properties</b>	<b>ALTERNATIVE C–Continued Maintenance and Upgrades of the Jet Fuel Distribution System as Needed (No Action Alternative)</b>
<b>SOCIOECONOMICS</b>			
Generation of revenue into the local economy	Incremental benefit would be realized from funds spent in nearby communities.	Incremental benefit would be similar to those in Alternative A.	Incremental benefit would depend upon the total number of projects implemented during the period.
<b>INFRASTRUCTURE</b>			
Use of transportation system	Some maintenance, upgrade, and construction projects along the jet fuel distribution system would require the transportation of equipment along major roads by haul trucks.	Some maintenance, upgrade, and expansion projects would include construction in adjacent properties. This would include the transportation of equipment along major roads by haul trucks.	Intermittent maintenance and upgrade projects would include the transportation of equipment along major roads by haul trucks.
Use of utility and communication systems	Maintenance, upgrade, and construction projects along the jet fuel distribution system could encounter buried utility and communication lines.	Maintenance, upgrade, and expansion projects along the jet fuel distribution system, and in adjacent properties, could encounter buried utility and communication lines.	Intermittent maintenance and upgrade projects similar to Alternative A could encounter buried utility and communication lines.
<b>ENERGY CONSERVATION</b>			
Installation of energy efficient systems	Replacement and modification of equipment would improve operation and energy efficiency.	Replacement and modification of equipment would be similar to Alternative A.	Replacement and modification of equipment would be similar to Alternative A.

\*No significant adverse impacts are anticipated from any alternative if the minimization measures listed throughout Section 4.0, Environmental Consequences, of this report are implemented.

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### 3.0 AFFECTED ENVIRONMENT

This section describes the relevant environmental resources at Edwards AFB that may be affected during maintenance, upgrades, construction, and/or expansion of the jet fuel distribution system. Each resource has been divided into subsections to further describe the environmental effects of the proposed actions. Regulatory guidance that would affect each action is also presented.

#### 3.1 Land Use

Land use has a variety of purposes on base including residential, industrial, commercial, recreational, and military. Specialized land use includes administration buildings, housing, flight training facilities, aircraft maintenance hangars, runways and taxiways, radio transmission areas, and storage facilities. The Base General Plan lays out the long-range development of Edwards AFB and establishes the goals, policies, plans, and anticipated actions regarding the physical, social, and economic environment of the base.

The jet fuel distribution system is located along certain corridors of the base with access to the flightline areas. Projects related to upgrades or construction of the jet fuel distribution system would be IAW the established goals of the Base General Plan. In addition, the Edwards AFB Planning and Zoning Committee grants final siting approval for all construction and activity related projects as part of the review and approval process.

Proposed action alternatives would also have the potential to generate FOD debris. Control of FOD is mandatory in maintaining a safe environment for aircraft operations and field personnel.

##### 3.1.1 Regulatory Requirements/Guidance

Air Force Instruction 32-7040, *Air Quality Compliance and Resource Management*, implements Air Force Policy Directive (AFPD) 32-70, *Environmental Quality*.

Air Force Instruction 32-7062, *Air Force Comprehensive Planning* (1997), contains the responsibilities and requirements for comprehensive planning and describes the procedures for developing, implementing, and maintaining the Base General Plan within the installation's comprehensive plan.

Air Force Instruction 32-1032, *Planning and Programming Appropriated Funded Maintenance, Repair, and Construction Projects* (2003), implements AFPD 32-10, by providing guidance and instruction for planning and programming projects for real property classified as maintenance, repair, unspecified minor military construction, and facilities for operational requirements using operations and maintenance (O&M) funds.

Air Force Instruction 13-213, *Airfield Management* (2008), applies to all organizations that operate activities or administer functions for military airfield management.

Air Force Flight Test Center Instruction (AFFTCI) 10-2, *Control of Vehicles on the Airfield* (Vehicles on the Airfield) (2005), sets policies, procedures, and responsibilities for all agencies,



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including associates and contractors that operate or support vehicles on the Edwards AFB flightlines.

Air Force Flight Test Center Instruction 11-2, *Ground Operations* (2004), applies to all ground agencies in support of aircraft operations at Edwards AFB. In addition, Air Force Joint Manual 24-306, *Manual for the Wheeled Vehicle Driver* (Vehicle Driver) (1993); AFI 21-101, *Aircraft and Equipment Maintenance Management* (Aircraft and Equipment Maintenance) (2006) and Air Force Materiel Command (AFMC) Supplement 1 (2007); and AFFTCI 11-15, *Scheduling Procedures for Aircraft and Air/Ground Support* (2005) contain procedures, policies, and responsibilities for all aircraft operations at Edwards AFB.

### 3.1.2 On-Base Land Use

The Kinder Morgan pipeline is the main line that delivers jet fuel to Edwards AFB. The buried pipeline enters the base near the south gate and follows Lancaster Boulevard to the ASTs located at the bulk fuels storage tank farm at the northern end of Main Base. Three lateral lines transfer fuel to hydrant systems and refueling stations on the flightline areas. These lines are the Martech/Hydrant I, or a 'chiller unit,' pipeline that transfers fuel from the tank farm to fueling stations at Building 1724; Hydrant III spur that supplies fuel to the main flightline; and South Base pipeline spur that supplies fuel to South Base.

### 3.1.3 Foreign Object Damage Control

Maintenance and repairs to refueling stations along the flightline areas have the potential to generate surface debris referred to as FOD materials. The FOD materials are of concern near aircraft flight operations since the ingestion of objects or debris into aircraft engines could adversely impact maintenance costs and increase the safety risk to aircraft operations and field personnel working on the runway and taxiway. The prevention of FOD is targeted specifically at flightline areas, and procedures are contained in AFMC Supplement 1 to AFI 21-101, *Aircraft and Equipment Maintenance Management*. The 412th Test Wing Logistics Quality Assurance Inspection Branch manages the reduction and/or elimination of FOD materials.

## 3.2 Air Quality

Air quality in California is regulated by the United States Environmental Protection Agency (U.S. EPA) and CARB, and locally by air pollution control districts (APCDs) or air quality management districts (AQMDs).

Typical stationary air pollution emission sources at Edwards AFB include internal combustion engine (ICE) generators, pumping stations, fuel vent pipes, and fueling/defueling stations. Air emissions from mobile sources include motor vehicles and construction equipment.

### 3.2.1 Regulatory Requirements/Guidance

The 1970 *Clean Air Act* (CAA) (42 U.S.C. 7401–7671) and the 1990 *Clean Air Act Amendments* (CAAA) (Public Law [PL] 101-549), respectively, are the body of federal laws that require the U.S. EPA and each state to regulate air pollution emissions from stationary and

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mobile sources to protect public health and welfare. Air quality regulations were first promulgated with the CAA and revised with the CAAA.

The CAAA require the U.S. EPA to establish and maintain National Ambient Air Quality Standards (NAAQS) that are used to manage air quality across the country. Under the 1988 *California Clean Air Act (CCAA)* (California Health and Safety Code [H&SC], Statutes of 1988, Chapter 1568), the state of California has adopted ambient air quality standards, known as the California Ambient Air Quality Standards (CAAQS), which are published in Title 17, California Code of Regulations (CCR), Section 70200, *Table of Standards*. The CAAQS are more stringent than NAAQS. Pollutants for which standards have been established are termed ‘criteria’ pollutants. The standards are based on criteria that show a relationship between pollutant concentrations and effects on health and welfare. The U.S. EPA and the state establish acceptable pollutant concentration levels to serve as ambient air quality standards.

Code of Federal Regulations, Title 40, Part 61, *National Emission Standards for Hazardous Air Pollutants*, states that in addition to complying with the provisions of this part, the owner or operator of a stationary source subject to standards in this part may be required to obtain an operating permit issued by an authorized state air pollution control agency or by the administrator of the U.S. EPA pursuant to Title V of the CAA as amended 15 November 1990.

Under the CAAA, Title V requires air agencies to establish federal operating permit programs and major sources of air pollutants to obtain Title V operating permits. A Title V operating permit is an all-encompassing permit that includes all local air district permits and regulatory requirements, and documents compliance with other CAAA regulations.

Title I of the CAAA requires states with nonattainment areas to develop regulations and plans, known as State Implementation Plans (SIPs), describing the measures the state will take to achieve attainment with NAAQS. Within the state of California, the authority to regulate sources of air emissions resides with the CARB and is delegated to local APCDs and AQMDs. Each air district prepares SIP elements for the areas under their regulatory jurisdiction and submits the elements to the CARB for review and approval. The CARB then incorporates the individual air district elements into a statewide SIP. The SIP is then submitted to the U.S. EPA for approval and publication in the *Federal Register*. The local air districts then enact rules and regulations to achieve the SIP requirements.

California State Assembly Bill (AB) 2588, *Air Toxics “Hot Spots” Information and Assessment Act*, 1987, requires the types and quantities of certain substances routinely released into the air by stationary sources be reported. The goals are to collect emission data, identify facilities having localized impacts, ascertain health risks, notify nearby residents of significant risks, and reduce those significant risks to acceptable levels.

California State AB 32, *California Global Warming Solutions Act of 2006*, would require the CARB to monitor compliance with, and enforce, any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism; and adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

### **3.2.2 Environmental Setting**

The AQMD and APCD boundaries are based on meteorological and geographic conditions and, where possible, jurisdictional boundaries such as county lines. Edwards AFB is located within the jurisdiction of three air districts: KCAPCD, Mojave Desert Air Quality Management District (MDAQMD), and Antelope Valley Air Quality Management District (AVAQMD) (Figure 4). The MDAQMD has jurisdiction in San Bernardino County east of the base and the AVAQMD in Los Angeles County south of the base.

The activities of the proposed alternatives would occur almost exclusively in the eastern Kern County portion of Edwards AFB, under the jurisdiction of the KCAPCD. As a result, maintaining air quality would be IAW with the regulatory requirements of the KCAPCD. Similarly, construction vehicles and tanker trucks traveling through the AVAQMD or the MDAQMD would be expected to comply with regulatory requirements of the respective air districts.

### **3.2.3 Climate**

The Mojave Desert region is sheltered from maritime weather influences of the Pacific Ocean by the Coastal range to the west and the San Gabriel Mountains to the south. The climate of the Mojave Desert is governed by the strength and location of a semipermanent, subtropical, high-pressure cell over the Pacific Ocean. In general, hot summers, cold winters, infrequent rainfall, active air movement, and very low relative humidity characterize the climate of the region. These conditions promote intense heat during the day in summer months and marked cooling at night. The intense solar radiation in the summer is highly conducive to the formation of ozone (O<sub>3</sub>) and other photochemical oxidants in the atmosphere when precursor chemicals from emission sources are present.

#### **3.2.3.1 Wind/Pollutant Dispersion**

The prevailing wind direction is from the west-southwest (240 degrees) throughout the year with an average windspeed of 8 miles per hour (mph). The highest average windspeeds occur during the spring and summer months, with the lowest windspeeds occurring during the winter.

Prevailing winds are responsible for transporting air pollutants from neighboring air basins to the Mojave Desert region. Air pollutants from the San Joaquin Valley and the Los Angeles Basin to the west influence the air quality in the western Mojave Desert Air Basin. Similarly, air pollutants from San Bernardino and Riverside Counties to the east influence air quality in the Mojave Desert Air Basin and the greater Antelope Valley (AFFTC, 1995a).

#### **3.2.3.2 Baseline Air Quality**

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size of the air basin, and prevailing meteorological conditions. The significance of pollutant concentrations is determined by comparing the concentration levels to the NAAQS and CAAQS. These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection to public respiratory health and welfare under reasonable margins of safety.

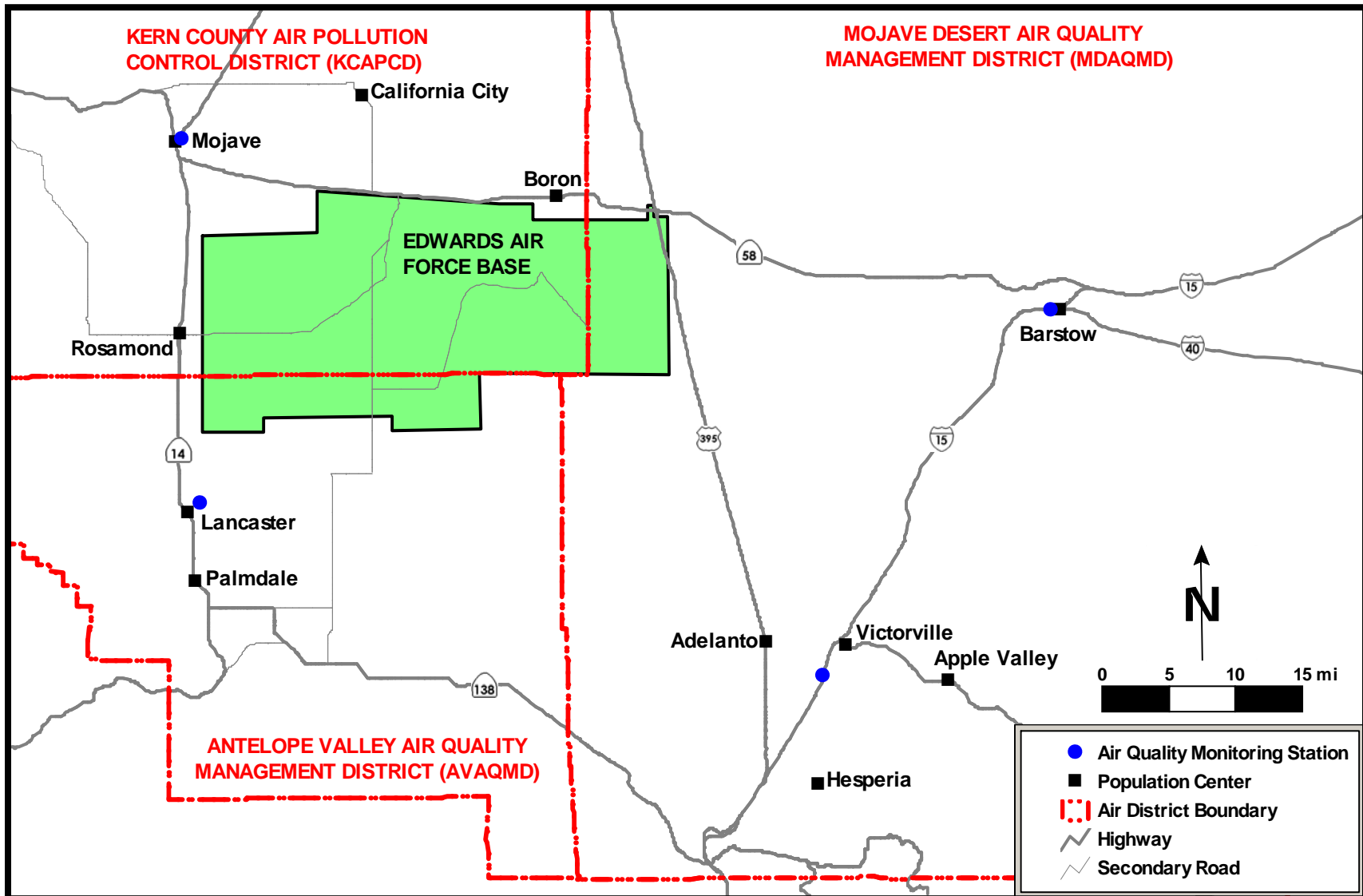


Figure 4. Air District Boundaries

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Under the NAAQS, the U.S. EPA has developed numerical air emission concentration standards for seven criteria pollutants under provisions of the CAA. The criteria pollutants include O<sub>3</sub>, fine particulate matter equal to or less than 2.5 microns (PM<sub>2.5</sub>) and 10 microns (PM<sub>10</sub>), carbon monoxide, nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and lead. The CARB has developed similar numerical concentration standards based on CAAQS for the same seven criteria pollutants in addition to visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

The CARB and U.S. EPA track air quality on an ongoing basis and designate areas or basins as either attainment or nonattainment, based on the concentration of criteria pollutants present over an 8-hour period. An area can be designated as basic, moderate, serious, severe, or extreme nonattainment depending upon the level of pollutant concentrations. Likewise, if standards for pollutants are met in a particular area, the area is designated as attainment. Areas are designated as unclassified when standards have not been established, or when there is a lack of monitoring data for criteria pollutants. Unclassified areas are treated as attainment areas until proven otherwise. The subpart designation indicates an area basin with certain air pollutant requirements. Subpart 1 designation is a less prescriptive requirement for any pollutants governed by an NAAQS, including O<sub>3</sub>. Subpart 2 designation is a classification scheme for O<sub>3</sub> nonattainment areas and provides more specific requirements for O<sub>3</sub> nonattainment.

The air quality for each of the air districts has been evaluated and their current status according to NAAQS has been documented. The KCAPCD has been designated basic/Subpart 1 nonattainment for the 8-hour O<sub>3</sub> NAAQS, and in unclassified or attainment for PM<sub>10</sub>. The MDAQMD and AVAQMD are both moderate/Subpart 2 nonattainment for the 8-hour O<sub>3</sub>, NAAQS. The AVAQMD is unclassified/attainment for PM<sub>10</sub> and MDAQMD is moderate/nonattainment for PM<sub>10</sub>. The NAAQS air quality status for Edwards AFB and surrounding air districts is presented in Figure 5.

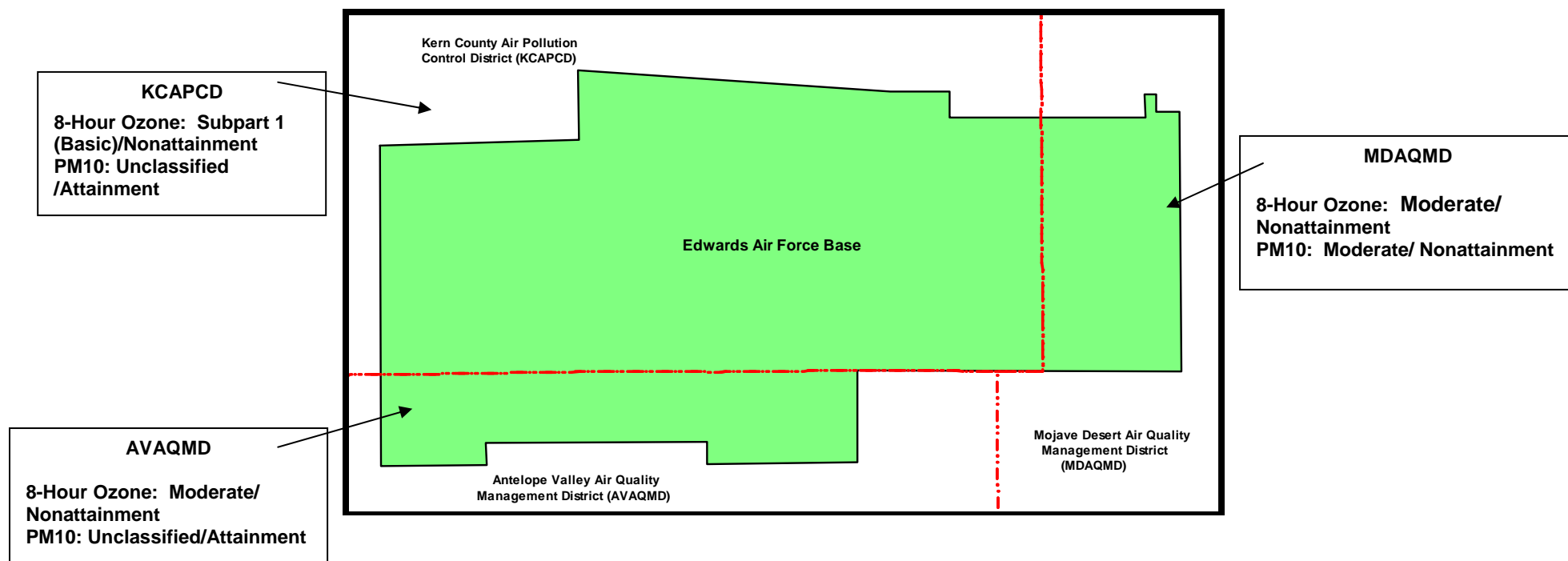
### 3.2.3.2.1 Ozone

Ozone is produced in the atmosphere by photochemical reactions involving previously emitted pollutants or precursors. Ozone precursors are mainly two types: volatile organic compounds (VOCs) and oxides of nitrogen (NO<sub>x</sub>). Volatile organic compounds contain carbon and hydrogen atoms, while NO<sub>x</sub> are oxygenated nitrogen species that include nitric oxide, NO<sub>2</sub>, nitric anhydride, and nitrous anhydride. Reducing VOCs and NO<sub>x</sub> emissions in the atmosphere is important in controlling O<sub>3</sub> concentrations.

Ozone and its precursors transported from other regions can also combine with local emissions to produce high local O<sub>3</sub> concentrations. Ozone concentrations are generally the highest during the summer months and coincide with periods of maximum solar radiation. Maximum O<sub>3</sub> concentrations tend to be regionally distributed because precursor emissions are homogeneously dispersed in the atmosphere (AFFTC, 1995a).

### 3.2.3.2.2 Particulate Matter

Particulate matter consists of many different substances suspended in the air in the form of particles (solids or liquid droplets) that vary in size. Particulate matter 10 microns or less in diameter are defined as 'respirable particulate matter' or PM<sub>10</sub>. Fine particles are 2.5 microns or less in diameter and are referred to as PM<sub>2.5</sub>. Regional haze and reduction of visibility is caused



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### 8-Hour Ozone Classifications:

**Subpart 1 (Basic):** 100-ton limit per pollutant per action per year

**Moderate:** 100-ton limit per pollutant per action per year.

SOURCE: U.S. EPA website, December 2007

**Figure 5. National Ambient Air Quality Standards Attainment Status Map**

by PM<sub>2.5</sub>. Sources of PM<sub>10</sub> include motor vehicles, wood-burning stoves and fireplaces, construction, wind-blown dust, landfills, agriculture, wildfires and bush/waste burning, industrial sources, and paved and unpaved roads. Sources of PM<sub>2.5</sub> include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles. These fine particles are also formed in the atmosphere when gases such as SO<sub>2</sub>, NO<sub>x</sub>, and VOCs are transformed in the air by chemical reactions. Health effects may include increased risk for respiratory disease, lung damage, and cancer.

#### **3.2.3.2.3 Greenhouse Gases**

Greenhouse gases include carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride which are considered to be air pollutants associated with climate change. The California legislature passed AB 32 requiring the CARB to adopt regulations to report and verify statewide GHG emissions, and monitor and enforce compliance with the program. The bill would also require the CARB to adopt a statewide GHG emissions cap equivalent to emissions in 1990, to be achieved by 2020; and emission levels 80 percent below the 1990 level by 2050. Rules and regulations to implement the procedures of AB 32 are still pending.

Compliance with California AB 32 would require:

- a. Compiling a GHG inventory, including facility-level GHG emissions assessment;
- b. Establishing a GHG data-management and compliance-tracking process;
- c. Conducting an emissions-reduction opportunity assessment;
- d. Recommending new technologies to reduce GHG emissions;
- e. Prioritizing GHG emission-reduction procedures, including carbon credit market opportunities that may qualify as offsets; and
- f. Implementing strategies and communicating GHG emission procedures to basewide organizations.

#### **3.2.4 Local District Control**

The concentrations of ambient criteria pollutants in the atmosphere are measured at air quality monitoring stations. The closest CARB air quality monitoring station to Edwards AFB is located in Mojave, California. To ensure compliance with relevant federal and state air laws, each district enacts their own rules and regulations. Local air districts use stationary source new source review (NSR) permits, such as an authority to construct and a permit to operate, as means of implementing air quality rules and regulations. The use of stationary equipment during construction projects along the jet fuel distribution system may require compliance with these local air permit requirements.

Each air district follows their own NSR guidance; for KCAPD, it is Rule 210.1, *New and Modified Stationary Source Review (NSR)* (KCAPD, 2000); MDAQMD, Rule 1303, *Requirements (New Source Review)* (MDAQMD, 2001); and AVAQMD, Rule 1901, *General Conformity Rule* (AVAQMD, 1994). These rules provide guidance for any air emissions generated from new and modified stationary sources to ensure the emissions are in conformity

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with ambient air quality standards. The rules also recommend the installation of best available control technology to ensure no net increases in air pollutants and their precursors is produced.

In order to enforce these rules, the air districts have established baseline emission levels for new or modified stationary sources of PM<sub>10</sub>, sulfur oxides (SO<sub>x</sub>), NO<sub>x</sub>, and VOCs in nonattainment areas (Table 3). Projects that generate emissions in excess of these threshold levels require offsets.

**Table 3. New Source Review Threshold Emission Levels**

Air District	New Source Review Threshold Emission Levels per Pollutant (tons/year)			
	PM <sub>10</sub>	SO <sub>x</sub>	VOC	NO <sub>x</sub>
KCAPCD	15	27	25	25
AVAQMD	15	25	25	25
MDAQMD	15	25	25	25

Notes: 1. PM<sub>10</sub>—particulate matter less than or equal to 10 microns  
2. SO<sub>x</sub>—sulfur oxide  
3. VOC—volatile organic compound  
4. NO<sub>x</sub>—nitrogen oxide  
5. KCAPCD—Kern County air Pollution Control District  
6. AVAQMD—Antelope Valley Air Quality Management District  
7. MDAQMD—Mojave Desert Air Quality Management District

Source: CARB website, December 2007

### 3.2.4.1 California State Implementation Plan

The California SIP for O<sub>3</sub> was approved by the U.S. EPA in September 1996 and codified into law in 40 CFR, Part 52, Subpart F, *Approval and Promulgation of Implementation Plan—California*. Other than this SIP, no other air quality management plans apply to projects that may be implemented under the proposed alternatives.

The U.S. EPA designated eastern Kern County as basic nonattainment for the 8-hour O<sub>3</sub> NAAQS (40 CFR 81) on 15 April 2004. The KCAPCD is currently preparing a basic/Subpart 1 attainment plan for approval by the U.S. EPA.

### 3.2.5 Conformity Requirements

Under the conformity provisions of the CAAA, no federal agency can approve or undertake a federal action, or project, unless the project has demonstrated conformity with the applicable SIP. These conformity provisions were put in place to ensure that federal agencies contribute to efforts to attain the NAAQS. The U.S. EPA has issued two conformity guidelines that include transportation conformity rules that apply to transportation plans and projects, and general conformity rules that apply to all other federal actions. A conformity determination is only required for the alternative that is ultimately selected and approved. The general conformity determination is submitted in the form of a written finding, issued after a minimum 30-day public comment period on the draft determination.



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The general conformity rule prohibits any federal action that does not conform to the applicable air quality attainment plan or SIP, and applies to areas designated as nonattainment or maintenance for NAAQS. General conformity applicability analysis requires quantification of construction and operation emissions from projects, and comparison of these emission levels with baseline emissions. If the differences in emissions (i.e., the net emissions associated with the proposed project) exceed the general conformity *de minimis* levels for the peak year or any milestone year for attainment standards, additional general conformity determinations would be required.

A project is exempt from the conformity rule (presumed to conform) if the total net project-related emissions (construction and operation) pass two tests: they are less than the *de minimis* thresholds established by the conformity rule and they are not regionally significant (emissions are regionally significant if they exceed 10 percent of the total threshold emission inventory). A project that produces emissions that exceed conformity thresholds, or is regionally significant, is required to demonstrate conformity with the SIP through minimization or other accepted practices.

The proposed alternative actions would be located within the Kern County portion of Edwards AFB. The area is designated Subpart 1 (basic)/nonattainment for the 8-hour O<sub>3</sub> NAAQS. In accordance with the air conformity requirements of 40 CFR 51.853/93.153(b)(1), *Air Conformity Applicability*, and KCAPCD Rule 210.7, *Federal General Conformity*, the *de minimis* levels set for the O<sub>3</sub> Subpart 1 (basic)/nonattainment is 100 tons per O<sub>3</sub> precursor pollutant (NO<sub>x</sub> and VOC) per year per federal action.<sup>1</sup>

The air quality analysis refers almost exclusively to regulatory requirements and air quality impacts in the KCAPCD. However, there may be instances when project-related construction vehicles and tanker trucks travel through adjoining air districts and generate air emissions. Travel through air districts like the AVAQMD portion of the base, in northern Los Angeles County, and the eastern portion of the MDAQMD would occur in a moderate/nonattainment area for the O<sub>3</sub> NAAQS. The emissions increase in the area would indirectly result from the proposed actions and would be considered in the analysis of the applicability of general conformity to the proposed actions. The applicable *de minimis* level for O<sub>3</sub> in the AVAQMD and MDAQMD, designated moderate/nonattainment, would be 100 tons per O<sub>3</sub> precursor pollutant (NO<sub>x</sub> and VOC) per year per federal action.

In addition to *de minimis* levels, the NAAQS regional planning emission inventories for KCAPCD, AVAQMD, and MDAQMD would be used to determine the applicability of air conformity requirements to the proposed action. For KCAPCD, AVAQMD, and MDAQMD, the regional planning emission inventories for O<sub>3</sub> precursor pollutants (NO<sub>x</sub> and VOC) are included in the 1994 California O<sub>3</sub> SIP, Volume I (CARB, 1994). In the California O<sub>3</sub> SIP, the regional planning baseline year is 1990. Table 4 presents the 1990 regional baseline emission inventory and the 10-percent threshold values.

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<sup>1</sup>The U.S. EPA has not yet ruled on *de minimis* levels for basic nonattainment areas, but it can be assumed that the same levels would be allowed for basic nonattainment areas as are currently allowed for moderate nonattainment areas. Basic nonattainment areas have less severe air quality issues than moderate nonattainment areas and earlier attainment target dates.

**Table 4. 1990 Baseline and 10-Percent Threshold Values**

	<b>1990 Baseline Values (tons/year)</b>			<b>10-Percent Threshold (tons/year)</b>		
<b>District</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>PM10</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>PM10</b>
<b>KCAPCD</b>	14,965	6,205	N/A	1,496.5	620.5	N/A
<b>AVAQMD</b>	10,220	12,775	N/A	1,022.0	1,277.5	N/A
<b>MDAQMD</b>	41,610	16,790	34,310	4,161.0	1,679.0	3,431

- Notes:
1. NO<sub>x</sub>—nitrogen oxide
  2. VOC—volatile organic compound
  3. PM10—particulate matter less than or equal to 10 microns
  4. KCAPCD—Kern County Air Pollution Control District
  5. N/A—not applicable
  6. AVAQMD—Antelope Valley Air Quality Management District
  7. MDAQMD—Mojave Desert Air Quality Management District

Source: CARB website, December 2007Regulatory Requirements/Guidance

### 3.3 Water Resources

Water resources describe the quality, quantity, source, and use of water at Edwards AFB, which includes potable water, wastewater, and stormwater. The sources of water on Edwards AFB include groundwater, Antelope Valley-East Kern Water Agency water, treated wastewater (irrigation), and stormwater.

Edwards AFB has various facilities dedicated to water resources. They include: six chlorination points for potable water, numerous potable and nonpotable water storage tanks, two operating wastewater treatment plants (Main Base and Air Force Research Laboratory [AFRL] with associated evaporation ponds), and stormwater retention ponds.

The CWA, as amended, is designed to restore and maintain the chemical, physical, and biological integrity of surface waters. The CWA establishes effluent standards on an industry basis and addresses water pollution issues through a permitting system designed to control, and eventually eliminate, water pollution. Violations of the CWA can result in large fines and/or imprisonment.

Air Force Instruction 32-7041, *Water Quality Compliance* (2003), provides details of the Air Force Water Quality Compliance Program. It applies to generating, collecting, treating, reusing, and disposing of domestic and industrial wastewater, stormwater, nonpoint-source runoff, sewage sludge, and water treatment residuals. It also explains how to assess, attain, and sustain compliance with the CWA; other federal, state, and local environmental regulations; and related DOD and Air Force directives.

Construction activities on Edwards AFB should adhere to the terms and conditions of the *Storm Water Pollution Prevention Plan (SWPPP)*, *Edwards Air Force Base, California* (AFFTC, 1998b). The *SWPPP* identifies and assesses sources of stormwater pollution and develops practices and controls to reduce the amount of pollutants in stormwater discharges.

### 3.3.1 Stormwater Management

Edwards AFB has been subdivided into six stormwater management units (SMUs): Main Base Flightline, Main Base Miscellaneous, South Base, National Aeronautics Space Administration/Dryden Flight Research Center (NASA/DFRC), AFRL, and North Base. These units are defined as nonphysical in that the boundaries reflect tenant lease areas and other organizational areas. In addition to the SMUs, eight stormwater drainage areas (SWDAs) have also been delineated in the Edwards AFB *SWPPP*. These SWDAs include the Main Base Flightline South, Main Base Flightline Central, NASA/DFRC/Main Base Flightline North, South Base, North Base, Piute Ponds, Small Arms Range, and Main Base Outlying Region. These SWDAs are delineated with respect to topographical features. The *SWPPP* describes each drainage area in detail including watershed association, area covered, containment structures and areas, and facility association (AFFTC, 1998b).

The Edwards AFB *SWPPP* identifies and assesses sources of stormwater pollution and develops practices and controls to reduce the amount of pollutants in stormwater discharges. The *SWPPP* helps identify the sources of pollution that affect the quality of industrial stormwater and authorized nonstormwater discharges, and ensures the implementation of the best management practices to reduce or prevent pollutants in industrial stormwater and authorized nonstormwater discharges.

Excessive discharges of various waste materials into the wastewater system are not permitted, unless approved by Civil Engineering, Environmental Management, and Bioenvironmental Engineering. These include:

- a. Any liquid, solid, or gas that could cause flammable or explosive conditions such as fuel, solvents, or oil;
- b. Toxic or poisonous solids, liquids, or gases in such quantities that may create a hazard for humans, animals, or the environment;
- c. Waste that has a potential of hydrogen (pH) lower than 6.0 or has any corrosive characteristic;
- d. Water added for the purpose of diluting wastes;
- e. Petroleum or mineral-based cutting oils;
- f. Dissolved silica, dissolved aluminum, or other substances including high pH material; and
- g. Waste having an excessively high temperature of 140 degrees Fahrenheit or higher.

A complete listing of prohibited wastes can be found in AFFTCI 32-6, *Edwards AFB Wastewater Instruction* (1995).

### 3.4 Safety and Occupational Health

Safety and occupational health is defined as the protection of workers and the public from hazards. The total accident spectrum encompasses not only injury to personnel, but also damage or destruction of property or products. For worker safety, the boundary of the immediate work area defines the region of influence. Potential health and safety issues are associated with the general maintenance and upgrades to storage tanks and support facilities such as pipelines, pipeline connections, hydrant outlets, pumping units, and fill stands.

### 3.4.1 Regulatory Requirements/Guidance

The Occupational Safety and Health Administration (OSHA) developed standards to promote a safe working environment. The standards establish general environmental controls, including personal protective equipment (PPE), wherever necessary, because of hazards, processes, or the environment. Exposure limits for toxic and hazardous substances and noise have been established. The *Occupational Safety and Health Act of 1970 (OSH Act)* (PL 91-596, amended 2004) also provides standards for emergency response to releases of hazardous chemicals and wastes.

Federal OSHA requirements and AFIs are the applicable regulatory requirements. California OSHA (Cal/OSHA) regulations do not apply to Edwards AFB DOD workers (e.g., military and civilian). However, independent contractors are responsible for meeting Cal/OSHA requirements. Statutory and regulatory requirements of the federal OSHA and Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) standards, which apply to the safety of workers on Edwards AFB, are enforced locally by Bioenvironmental Engineering, Ground Safety, and the Fire Department. In addition, operational safety is supervised by various offices for specific activities.

Title 29 U.S.C. 654, *General Duty Clause*, states that employers shall provide a workplace free of recognized hazards that cause, or are likely to cause, death or serious physical harm.

Title 29 CFR 1910.146, *Occupational Safety and Health Standards, Subpart J, General Environmental Controls, Permit-Required Confined Spaces*, refers to confined space requirements.

Title 29 CFR 1910.95, *Occupational Noise Exposure*, states that protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in the regulation.

Title 29 CFR 1926.1101, *Asbestos*, regulates exposure in all work, and in particular to demolition or salvage of structures, as defined in 29 CFR 1926.1101(a)(1).

Title 29 CFR 1910.1025, *Lead*, applies to all occupational exposures to lead in all industries covered by the *OSH Act*.

Title 29 CFR 1926.62, *Safety and Health Regulations for Construction, Lead*, applies to all construction work where an employee may be occupationally exposed to lead. All construction work is excluded from coverage in the general industry standard for lead by 29 CFR 1910.1025(a)(2). Construction work is defined as work for construction, alteration, and/or repair, including painting and decorating.

### 3.4.2 Exposure Hazards

Exposure hazards refer to environmental conditions that would be encountered during maintenance or construction of the fuel distribution system. These conditions would include exposure to chemical hazards, hazardous noise, heavy-metal paints, venomous snakes, hantavirus, valley fever, and heat stress.

#### 3.4.2.1 Chemical Hazards

Exposure to chemical hazards could occur during maintenance, construction, and demolition projects involving pipelines, pipeline connections, pump units, and fueling systems. Chemical hazards would include asbestos-containing material (ACM), lead-based paint (LBP) and heavy metal-based paints, commercial polychlorinated biphenyls (PCBs), solvents, and jet fuels. Disposal of wastestreams generated during the completion of these projects are discussed in Section 3.5, Hazardous Materials/Waste and Solid Waste, of this document.

Asbestos-containing materials could be encountered during the replacement and repairs to insulation material including gaskets. Heavy-metal paints could be encountered during the handling of painted metal equipment and pipelines; and commercial PCBs could be encountered in the removal of transformers. Solvents may be used during the maintenance of equipment, and the handling of jet fuel would always remain an exposure hazard. Residual fuels and fuel vapors may also be encountered during routine maintenance of pipelines and the hydrant system.

Heavy-metal paints are used for their adhesive qualities on a variety of surfaces. The most commonly used are LBP and mercury-based paint. The use of LBP was common from the 1950s to recent. Lead is a heavy, ductile metal that is commonly found in association with organic compounds, as well as inorganic compounds such as lead oxides, lead salts, or metallic lead. Sources of exposure to lead are through paints, dust, and soil.

Mercury-based paints were commonly used in the United States prior to the 1950s. Chromium is used in some paints due to its corrosion inhibiting properties. Chromium has been detected in yellow paint samples from existing on-base facilities. Lead-, mercury-, and chromium-based paints may, therefore, be present on exterior and interior painted surfaces in existing buildings and structures.

#### 3.4.2.2 Hazardous Noise

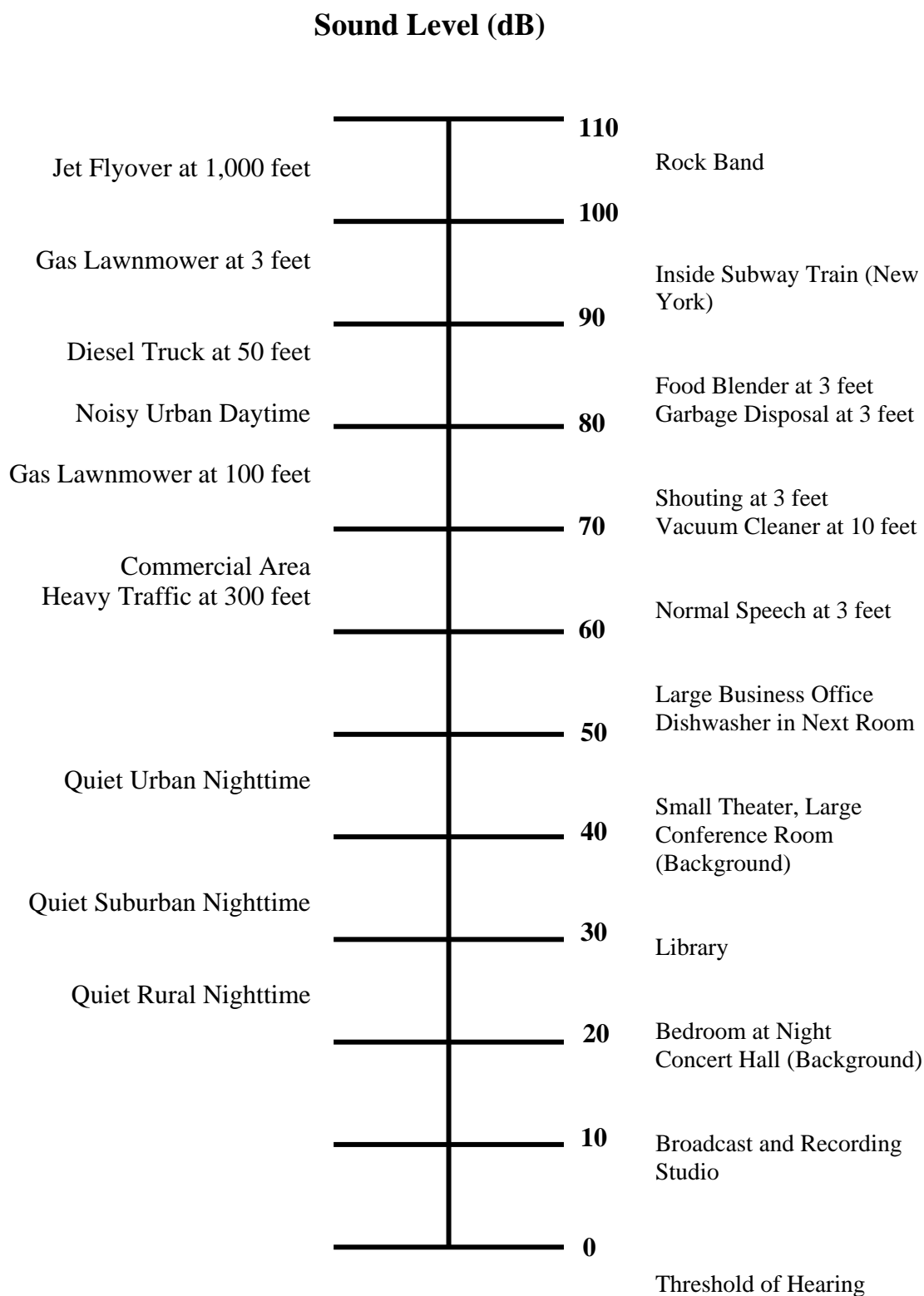
Hazardous noise exposure occurs when workers are present in areas where ambient noise levels exceed 85 dB. Title 29 CFR 1910.95 states that protection against the effects of noise exposure should be provided when the sound levels exceed those shown in this regulation. Figure 6 compares the relative noise of common sounds.

Noise generated during construction activities is mainly due to the operation of various types of heavy equipment including, but not limited to, pneumatic hammers and drills, concrete saws, vibrating compactors, bulldozers, backhoes, graders, and cable plows. Noise levels would range from 70 dB to greater than 85 dB.

To prevent potentially harmful effects to military and DOD civilian personnel from exposure to hazardous noise, the Air Force has established protective measures in compliance with AFOSH Standard 48-19, *Hazardous Noise Program* (1993). Under this program, Bioenvironmental Engineering is responsible for conducting hazardous noise surveillance to determine if military or DOD civilian personnel, working in areas where hazardous noise exposure may occur, would require engineering and administrative controls or personal protection. Non-DOD civilian personnel working on the installation are exempt from AFOSH Standard 48-19, but must comply with applicable federal and state regulations. An example of noise levels along the flightline are presented as noise contours in Figure 7.

**Common Outdoor Sound Levels**

**Common Indoor Sound Levels**



**Figure 6. Comparative Levels of Common Sound**

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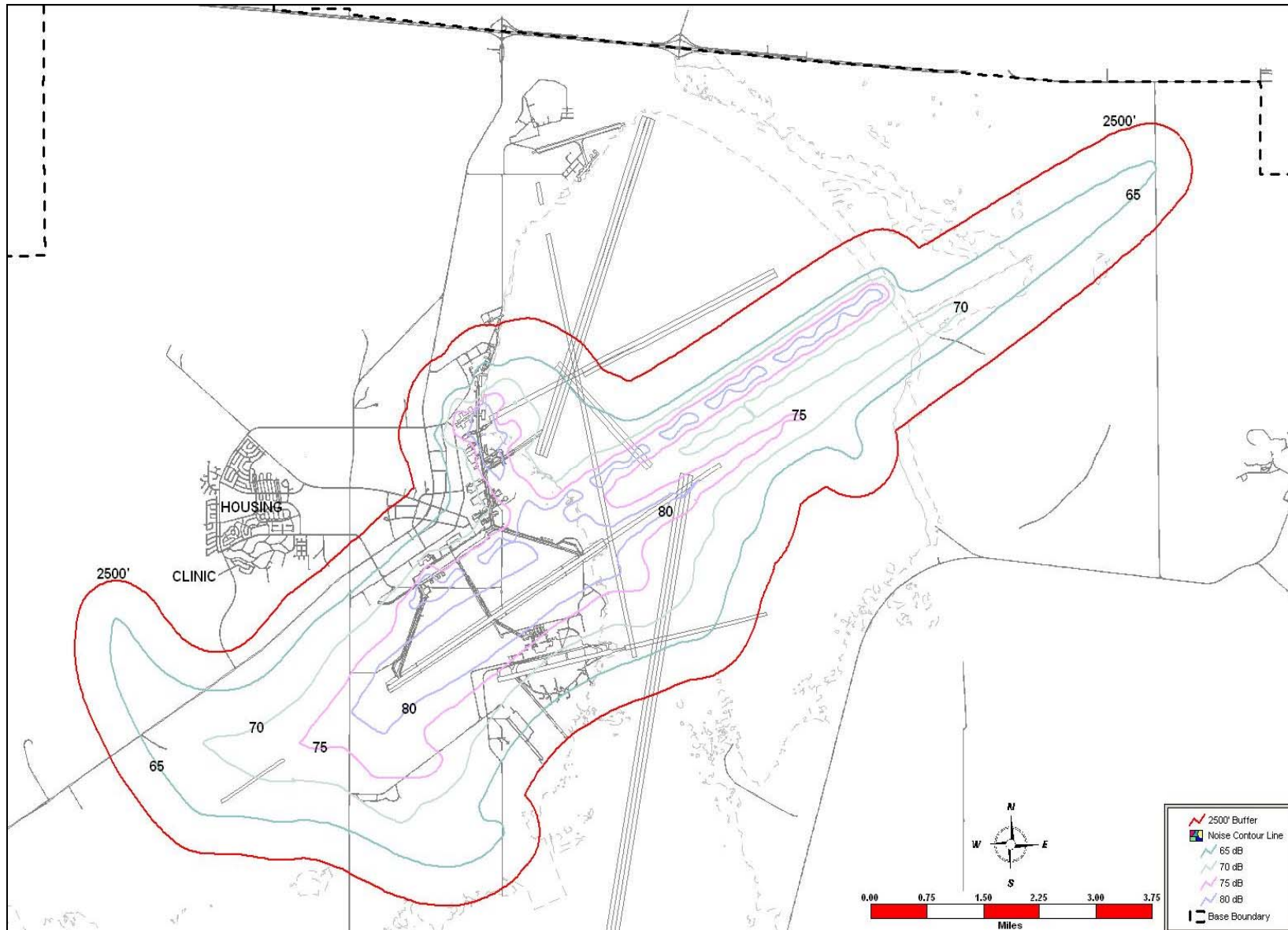


Figure 7. Noise Contours along the Main Base Flightline

### 3.4.2.3 Environmental Hazards

Environmental conditions exist at Edwards AFB that can present a human health hazard to personnel. Specifically, personnel working outdoors could experience heat stress during the summer, encounter venomous snakes, or be exposed to hantavirus and valley fever spores. Occurrences of valley fever have been diagnosed in rare instances at Edwards AFB.

### 3.4.3 Safety

The statutory and regulatory requirements of the federal OSHA and AFOSH standards, which apply to the safety of DOD workers on Edwards AFB, are enforced locally by Bioenvironmental Engineering, Safety, and the Fire Department. Guidance documents regarding fuel safety standards, management, and storage practices follow the CSFM MOA; 49 CFR 195, *Transportation of Hazardous Liquids by Pipeline; The Elder California Pipeline Safety Act 1981* (California Government Code, Title 5, Division 1, Part 1, Chapter 5.5, Sections 51010–51019); AFI 23-201, *Fuels Management* (2004); and AFI 23-204, *Organizational Fuel Tanks* (1994).

## 3.5 Hazardous Materials/Waste and Solid Waste

A HAZMAT is any material whose physical, chemical, or biological characteristics, quantity, or concentration may cause or contribute to adverse effects in organisms or their offspring; pose a substantial present or future danger to the environment; or result in damage to or loss of equipment, property, or personnel.

Hazardous wastes are those substances that have been “abandoned, recycled, or are inherently wastelike,” and that (because of their quantity, concentration, or characteristics) have the potential to cause an increase in mortality or serious irreversible illness or pose a substantial hazard to human health or the environment if improperly treated, stored, transported, and/or discarded.

For purposes of this analysis, the terms HAZMAT and hazardous waste are those substances as defined by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)* (42 U.S.C. 9601, et seq.) and the *Resource Conservation and Recovery Act of 1976 (RCRA)* (42 U.S.C. 6901–6991).

### 3.5.1 Regulatory Requirements/Guidance

The *RCRA* is administered by the U.S. EPA. The act regulates the handling, transport, storage, treatment, and disposal of solid and hazardous waste. It places responsibility for hazardous waste on the facilities generating the waste and requires them to meet various standards regarding personnel training, facility inspections, waste identification and analysis, emergency response planning, and record keeping.

The *CERCLA* provides broad federal authority to respond directly to releases or threatened release of hazardous substances that may endanger public health or the environment. The act authorizes short-term removal actions and long-term remedial response action. The act establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; provides for the liability of persons responsible for release of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified.



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Air Force Instruction 32-7042, *Solid and Hazardous Waste Compliance* (1994), implements AFPD 32-70, *Environmental Quality* (Environmental Quality AFPD) (1994). The AFI identifies compliance requirements for all solid and hazardous waste, except radioactive waste.<sup>2</sup> In the United States and its territories, this guidance is intended to be used with applicable federal, state, and local standards for solid and hazardous waste. Specifically, it contains requirements for solid and hazardous waste characterization, training, accumulation, turn-in and disposal, as well as procedures for managing disposal contracts, inspections, permits, and recordkeeping.

Air Force Instruction 32-7086, *Hazardous Materials Management* (2004), implements the Environmental Quality AFPD; AFPD 23-2, *Supplies and Materiel Management* (1993); AFPD 90-8, *Environmental, Safety, and Occupational Health* (1999); AFPD 90-9, *Operational Risk Management* (2000); and AFPD 91-3, *Occupational Safety and Health* (1993). It establishes procedures and standards that govern management of HAZMAT throughout the Air Force. It applies to all Air Force personnel who authorize, procure, issue, use, or dispose of HAZMAT in the course of their official duties; and to those who manage, monitor, or track any of the preceding processes, whether the processes are performed by government or contractor personnel.

Edwards AFB Instruction 32-119, *Edwards Air Force Base Hazardous Material Management Process* (2008), ensures that the base remains in compliance with all applicable federal, state, local, and Air Force regulations and laws regarding HAZMAT management. The instruction involves the use of information systems and positive control of HAZMAT to minimize occupational exposures, monitor and minimize environmental releases, and minimize hazardous waste disposal. The HAZMAT processes would be reviewed by the workplace supervisor. Environmental Management, Ground Safety, and Bioenvironmental Engineering would ensure that the least occupational and environmentally HAZMAT are used. All HAZMAT transactions would occur using the most current automated data system fielded for use on Edwards AFB.

*Edwards Air Force Base Hazardous Waste Management Plan Number 32-7042 (HWMP)* (AFFTC, 1999) supports Air Force regulations and is intended to ensure compliance with applicable federal, state, and local regulations. The objective of the *HWMP* is to provide sufficient administrative direction and instructions for originators of *RCRA* and non-*RCRA* wastes to properly characterize, package, label, store, treat, handle, and transport hazardous waste at Edwards AFB. The goals are to ensure compliance with the applicable federal, state, and local hazardous waste regulations, simplify administrative procedures, and reduce pollution and environmental impacts through improved waste management practices.

The *Municipal Solid Waste Management Plan (MSWMP) for AFFTC/EMCP (AFFTC/Environmental Management Directorate, Environmental Quality Division, Pollution Prevention Branch), Edwards Air Force Base, California* (AFFTC, 2000) describes Environmental Management's functional management of municipal solid waste disposal and recycling on Edwards AFB. The purpose of the plan is to comply with federal, state, and local regulations and Air Force policy and guidance on the management of nonhazardous municipal solid waste.

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<sup>2</sup>The applicable solid waste regulations are in Subtitle D of Title 40 CFR Parts 240 to 244, 257, and 258; for hazardous waste, the applicable regulations are in 40 CFR, Parts 260 through 272, Subtitle C, *Regulations*.

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The *Air Force Flight Test Center Oil and Hazardous Substance Spill Prevention and Response Plan* (Spill Prevention and Response Plan) (AFFTC, 1993) is intended to fulfill the requirements of a Spill Prevention Control and Countermeasures (SPCC) Plan IAW 40 CFR 112, *Oil Pollution Prevention*, and an Oil Hazardous Substance Pollution Contingency Plan IAW 40 CFR 300, *National Oil and Hazardous Substances Pollution Contingency Plan*. The Spill Prevention and Response Plan describes general AFFTC procedures and policies for responding to a spill incident and is not intended to be a site-specific plan for all facilities at Edwards AFB. Site-specific contingency plans should be developed and posted for all facilities at Edwards AFB. The SPCC portion of the Spill Prevention and Response Plan pertains primarily to spill prevention and includes a discussion of the major types of spill prevention procedures, methods, and equipment incorporated into the base facilities. The Contingency Plan portion of the Spill Prevention and Response Plan specifies procedures to be followed when responding to releases, accidents, and spills involving oils or hazardous substances. These include spill detection, reporting, containment, cleanup, and disposal procedures.

### 3.5.2 Hazardous Materials

Edwards AFB uses a wide variety of HAZMAT in construction and maintenance projects that include, but are not limited to, acids; corrosives/caustics; glycols; compressed gases; coolants; paints and paint thinners; cleaning/degreasing solvents; batteries; sealants; adhesives; cements; caulking; fire retardants; hot asphalt (140 degrees Fahrenheit or greater); hydraulic fluids; and petroleum, oils, and lubricants. Building and facility maintenance requires the use of heating fuels, paints, aerosols, and fluorescent light bulbs, all of which are HAZMAT.

Project managers and authorized material coordinators are responsible for HAZMAT requisition from local sources or the base HAZMAT pharmacy. Hazardous materials used during maintenance or construction along the fuel distribution system would require review by Bioenvironmental Engineering and Environmental Management to identify any HAZMAT/ waste concerns. Prior to bringing any new HAZMAT on base, contractors are required to provide a copy of the relevant material safety data sheet (MSDS) to Bioenvironmental Engineering, who maintains a master HAZMAT inventory list for Edwards AFB with all listed MSDSs.<sup>3</sup>

All organizations and contractors are required to maintain strict inventories of all their HAZMAT. Furthermore, organizations are also required to reduce the quantity of HAZMATs used or replace them with non-HAZMAT, if possible, as a part of the Pollution Prevention Program. Guidelines used by Edwards AFB include AFI 32-7086, *Hazardous Materials Management*, and AFFTCI 23-1, *Hazardous Material Management Program*.

### 3.5.3 Hazardous Waste

The use of HAZMAT often generate hazardous waste (e.g., paint waste, asbestos, used oil, contaminated rags, and used spill containment/absorption material), which would require proper handling. Air Force Flight Test Center Instruction 23-1 provides guidelines for the generation, storage, transportation, and disposal of hazardous waste. The California Environmental Protection

<sup>3</sup>The OSHA regulations (29 CFR 1910.1200, *Hazard Communication*) require MSDSs for all hazardous chemicals used on base. The MSDS identifies a chemical's identity, its physical and health hazard information, safe handling and use procedures (including exposure control measures), and product use warnings. The AFOSH Standard 48-21, *Hazard Communication*, reestablishes the minimum requirements for an effective hazard communication program for personnel who use or produce hazardous chemicals.

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Agency enforces hazardous waste laws embodied in 22 CCR Chapters 10 through 20, *Hazardous Waste Management*, and the California H&SC (Section 25100), *Hazardous Waste Control*. Environmental Management manages hazardous waste accumulation.

Guidelines used by Edwards AFB include the HWMP (AFFTC, 2008), which was prepared IAW AFI 32-7042, *Solid and Hazardous Waste Compliance*. The HWMP establishes procedures to achieve compliance with applicable federal, state, and local regulations for hazardous waste management, except munitions, explosives, biohazards, and radioactive wastes. Specifically, it contains requirements for solid and hazardous waste characterization, training, accumulation, turn-in and disposal, as well as procedures for inspections, permits, and record keeping.

The storage of hazardous waste begins at the point of generation. An initial accumulation point (IAP) is an area at or near the point of hazardous waste generation where hazardous wastes may be accumulated until they are sent to either an accumulation site (ACCS) (known more commonly as a 90-day accumulation point) or the Hazardous Waste Storage Facility (HWSF) (a facility permitted to store hazardous wastes for up to 1 year). Any new IAP and its proposed location must be approved by and coordinated with Environmental Management in order to minimize the threat to human health and the environment.

The transportation of hazardous waste is governed by Department of Transportation (DOT) regulations that specify procedures for transporting these materials on public highways (49 CFR 100–199; 40 CFR 260–299; and 22 CCR Division 4.5, Chapter 13). However, these state and federal DOT regulations do not apply to the transportation of HAZMAT and/or hazardous wastes between points on base.

### 3.5.4 Solid Waste

Solid waste refers to nonhazardous garbage, refuse, sludge, and any other discarded solid material resulting from residential, commercial, and industrial activities or operations. Solid waste can be classified as construction/demolition, nonhazardous recyclable, or nonhazardous nonrecyclable wastes.

Edwards AFB operates a nonhazardous (municipal solid) waste landfill within the Main Base area and is in the process of establishing a processing center for inert debris such as construction and demolition waste. Currently, Edwards AFB has an established procedure for staging and processing inert debris and disposing of the construction and demolition debris. Inert debris is stockpiled in specified areas according to Civil Engineering instruction. The volume of construction and demolition debris is minimized by segregating recyclable materials to the maximum extent practicable before demolition. The remaining construction and demolition debris and other construction-related solid waste would be disposed of at an approved state-licensed landfill.

The base actively participates in a recycling program. A contractor operates the program under the administration of Civil Engineering. The Environmental Management group provides environmental compliance oversight.

### 3.6 Biological Resources

The plant and animal species that characterize the desert community can occur in previously disturbed areas around the base. Pipeline routes, shoulder areas of access roads, and areas surrounding storage facilities and fueling/defueling stations are areas that can support some of the resources.

The base manages species under consideration for protection under the state and federal endangered species acts, as well as other species considered sensitive by various agencies. Although protection of nonlisted species is not mandatory on federal installations, management of these species contributes to the overall maintenance of their natural populations and reduces the likelihood that these species would have to be given additional legislative protection in the future. Edwards AFB also manages nonfederally listed species through the use of general conservation measures outlined in the INRMP.

#### 3.6.1 Regulatory Requirements/Guidance

The *Endangered Species Act of 1973 (ESA)* (16 U.S.C. 1531–1544) provides a framework for the protection of endangered and threatened species. Federal agencies may not jeopardize the existence of listed species, which includes ensuring that actions they authorize, fund, or carry out do not adversely affect the species or adversely modify designated critical habitats. Under the *ESA*, all federal departments and agencies must utilize their authorities, as appropriate, to promote the recovery of listed species. In addition, the *ESA* prohibits all persons, including federal agencies, from harming or killing (taking) individuals of a listed species without authorization. While federal agencies must consult with the United States Fish and Wildlife Service (USFWS) when their activities may affect listed species, projects cannot be stopped unilaterally by the USFWS; however, for any anticipated take to be authorized, applicable measures developed in the consultation to minimize the take must be followed.

The *Migratory Bird Treaty Act of 1918 (MBTA)* (16 U.S.C. 703–712), as amended, provides for federal protection of all migratory bird species, their active nests, and eggs. Permits are required to remove these birds from their roosting and nesting areas. The United States Government is exempt from the *MBTA* permit requirements based on the court decision in the *MBTA*, but must minimize take caused by their activities. Nonfederal contractors are required to obtain a depredation permit from the USFWS prior to removal or disturbance of nesting birds.

The *Sikes Act* (16 U.S.C. 670a–670o), as amended, provides for cooperation between the Departments of the Interior and Defense and state agencies in planning, developing, and maintaining fish and wildlife resources on military reservations throughout the United States.

The *California Endangered Species Act (CESA)* (California Department of Fish and Game [CDFG] Code, Section 2050, et seq.) generally parallels the main provisions of the federal *ESA* and is administered by the CDFG. Under the *CESA*, the term ‘endangered species’ is defined as a “species of plant, fish, or wildlife which is in serious danger of becoming extinct throughout all, or a major portion of its range” and is limited to species native to California. The *CESA* establishes a petitioning process for the listing of state threatened or endangered species, and the CDFG is required to adopt regulations for this process. The *CESA* prohibits the taking of state-listed

species, except as otherwise provided in state law. Unlike the federal *ESA*, the *CESA* applies prohibitions to species petitioned for state listing (i.e., state candidates).

Air Force Instruction 32-7064, *Integrated Natural Resources Management* (2008), implements the Environmental Quality AFPD, and Department of Defense (DOD) Instruction 4715.3, *Environmental Conservation Program* (1996). The INRMP is the tool for managing natural resources on military installations that have natural resources requiring protection and management, such as habitat for protected species, aquatic resources, or any habitat that is suitable for conserving and managing wildlife.

### 3.6.2 Animal Species

Common mammals on Edwards AFB include the Mohave ground squirrel (*Spermophilus mohavensis*), the black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), and coyote (*Canis latrans*). Common rodents include the deer mouse (*Peromyscus maniculatus*), grasshopper mouse (*Onychomys torridus*), little pocket mouse (*Perognathus longimembris*), Merriam's kangaroo rat (*Dipodomys merriami*), and desert woodrat (*Neotoma lepida*). Common bats include the western pipistrelle (*Pipistrellus hesperus*) and little brown bat (*Myotis lucifugus*).

The desert tortoise (*Gopherus agassizii*) is an herbivorous reptile that resides on base. The reptile range includes the Sonoran and Mojave deserts of southern California, southern Nevada, Arizona, extreme southwestern Utah, and Sonora and northern Sinaloa, Mexico. This species is federally listed as threatened under *ESA* and threatened under the *CESA*. The desert tortoise is the only resident federally-listed species on Edwards AFB with legally required mandates on management practices. Desert tortoise surveys have been conducted for various parts of the base and are documented in several BOs. Edwards AFB is currently working to achieve a basewide BO that would coordinate all biological actions.

Common birds include the turkey vulture (*Cathartes aura*), common raven (*Corvus corax*), sage sparrow (*Amphispiza belli*), barn owl (*Tyto alba*), house finch (*Carpodacus mexicanus*), and western meadowlark (*Sturnella neglecta*). Common bird species found include the horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), and sage sparrow. Seasonal rains on lakebeds and claypans attract wading bird species, including the black-necked stilt (*Himantopus mexicanus*), American avocet (*Recurvirostra americana*), and greater yellowlegs (*Tringa flavipes*). Birds associated with ponds include the yellow-headed blackbird (*Xanthocephalus xanthocephalus*), black-crowned night heron (*Nycticorax nycticorax*), and green heron (*Butorides virescens*). Seasonal migratory birds use both permanent and temporary bodies of water for foraging shrimp. These birds include ducks and geese such as the ruddy duck (*Oxyura jamaicensis*), northern mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), Canada goose (*Branta canadensis*), and snow goose (*Chen caerulescens*).

Migratory birds pass through the region during seasonal migrations. The nesting season is generally from February to August. Buildings are known to be used as nesting habitats during this period. The birds are protected under the *MBTA*, as amended, which provides protection for all migratory bird species, their active nests, and eggs.

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There are six sensitive bat species on base, but none are federally listed. However, two of the bat species, the western mastiff (*Eumops perotis*) and pallid (*Antrozous pallidus*), have been designated species of concern and are being further evaluated for possible federal listing.

### 3.6.3 Plant Species

The desert cymopterus (*Cymopterus deserticola*) occurs on base and is state-listed as threatened. There are no federally listed plant species that have been identified on base.

Creosote bush (*Larrea divaricata*) scrub is dominant in the project area. At Edwards AFB, there are approximately 103,000 acres of creosote bush scrub that comprise approximately 34 percent of the area of the base. Common species found in this community include winterfat (*Ceratoides lanata*), cheesebush (*Hymenoclea salsola*), and Nevada tea (*Ephedra nevadensis*).

Arid phase saltbush scrub is dominated by allscale (*Atriplex polycarpa*). At Edwards AFB, there are approximately 45,300 acres of arid phase saltbush scrub that comprise approximately 15 percent of the area of the base. Common species found in this community include burrobush (*Ambrosia dumosa*), goldenhead (*Acamptopappas sphaerocephalus*), and cheesebush.

### 3.7 Cultural Resources

Cultural resources are defined by AFI 32-7065, *Cultural Resources Management* (2004), as any historical, archaeological, or American Indian artifacts and properties of interest. Cultural resources at Edwards AFB include archaeological resources from prehistoric and historic periods; historic period resources, including historic period structures and objects; and traditional cultural places.

As of August 2007, over 3,816 archaeological sites had been identified on Edwards AFB. Of these, over 1,851 sites represent the prehistoric period and over 1,965 date to the historic period. Prehistoric period sites include villages, temporary camps, rock shelters, milling stations, lithic deposits, quarries, cremations, rock features, and rock art. Historic period archaeological sites include refuse deposits, rock cairns, railroad grades, roads and trails, abandoned mines and homesteads, buildings and facilities, rock alignments, wells, and military sites. Of these, 1,089 sites have been evaluated for listing on the National Register of Historic Places (NRHP); 243 of these sites have been found eligible for listing on the NRHP either on individual merit or as contributing elements of historic districts. There is one National Historic Landmark on Edwards AFB, which is in the northern portion of Rogers Dry Lake.

#### 3.7.1 Regulatory Requirements/Guidance

The *National Historic Preservation Act of 1966 (NHPA)* (16 U.S.C. 470 et seq.), as amended, provides for the establishment of the NRHP and authorizes the establishment of criteria to determine the eligibility of cultural sites for listing on the NRHP. Section 106 of the *NHPA* requires federal agencies to evaluate the effects of their activities and programs on cultural resources, which include prehistoric and historic archaeological resources, historic resources, and traditional cultural places. Section 110 of the *NHPA* directs federal agencies to undertake, to the maximum extent possible, planning and actions necessary to minimize harm to cultural resources under their ownership or control, or affected by their activities and programs. Compliance with the *NHPA*; 36 CFR 800,

*Protection of Historic Properties*; and AFI 32-7065 at Edwards AFB is coordinated by the Base Historic Preservation Officer (BHPO).

The *Archaeological Resources Protection Act of 1979 (ARPA)* (16 U.S.C., Section 470aa–470ll) was intended to address the growing concern about the plundering of archaeological and historic sites. The *ARPA* makes it illegal to remove any archaeological resources from federal lands without a permit. Arrowheads lying on the surface are the only exception.

### **3.7.2 Prehistoric Archaeological Resources**

A number of American Indian groups are known ethnographically to have used the Antelope Valley to hunt and gather food surrounding prehistoric Lake Thompson (precursor to Rosamond and Rogers Dry Lakes) and groundwater springs that occurred in the region. The groups known to have inhabited the region included Kawaiisu, Tataviam, Kitanemuk, and Vanyume or Desert Serrano. Additional information on these groups can be found in the *Cultural Resources Overview and Management Plan of Edwards AFB, California, Volume 1, Overview of the Prehistoric Cultural Resources* (Earle et al., 1997a).

Prehistoric period sites include villages, temporary camps, rock shelters, milling stations, lithic deposits, quarries, cremations, rock features, and rock art. These sites have been evaluated in ongoing site evaluations by the Environmental Management Cultural Resources group. Currently, there are 97 prehistoric cultural sites (archaeological sites) that have been determined eligible for the NRHP.

### **3.7.3 Historic Resources**

Historic land use in the Antelope Valley was limited to mineral exploration activities until the middle of the 19th century. During the late 19th and early 20th centuries, land use activities in the area of Edwards AFB included precious metal exploration, development of railroad rights-of-way, ranching, and homesteading. Evaluation of historic sites on Edwards AFB is ongoing and conducted by the Cultural Resources group. Currently, there are 243 historic sites that have been evaluated and determined eligible for the NRHP.

Significant dates in the historic development of the Edwards AFB area are:

- a. 1909–The town of Muroc was founded and located east of the present-day control tower on the Main Base flightline;
- b. 1910–The Atchison, Topeka, and Santa Fe Railroad from Mojave to Barstow was constructed across Rogers Dry Lake and passed through the town of Muroc;
- c. 1928–The Muroc area was used for military exercises;
- d. 1934–A bombing and gunnery range was established at Rogers Dry Lake adjacent to the Muroc area;
- e. 1941–The Muroc Bombing and Gunnery Range headquarters was established on the west shore of Rogers Dry Lake (currently South Base);
- f. 1942–Muroc Flight Test Base was established as a separate facility at the northern end of Rogers Dry Lake (currently North Base);

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- g. 1943–The bombing and gunnery range was renamed Muroc Army Air Field;
- h. 1947–Muroc Army Air Field was combined with Muroc Flight Test Base and renamed Muroc AFB;
- i. 1949–Muroc AFB was renamed Edwards AFB; and
- j. Mid-1950s–Majority of base operations were moved to new facilities that comprise the current Main Base.

### 3.8 Geology and Soils

Geologic resources consist of naturally-formed minerals, rocks, and unconsolidated sediments. Soil refers to the uppermost layers of surficial geologic deposits and is developed by the weathering of those deposits. Concerns associated with the geologic setting at Edwards AFB include availability of borrow sites for fill material, projects located in the vicinity of geologic faults, and disturbances to ERP sites and associated remediation equipment.

#### 3.8.1 Regulatory Requirements/Guidance

In September 1990, the Air Force, along with U.S. EPA, Region IX; California Department of Health Services (now the California Department of Health Care Services [DHCS]); and California Regional Water Quality Control Board (RWQCB), Lahontan Region, signed a Federal Facility Agreement (FFA) pursuant to the following authority: *CERCLA*, Section 120, as amended by *Superfund Amendments and Reauthorization Act (SARA)*; Sections 3004 (u) and (v), 3008 (h), and 6001 of *RCRA*; *CWA*; *NEPA*; EO 12580, *Superfund Implementation*; Defense Environmental Restoration Program (DERP); and California Health and Safety Code, Division 20, Chapters 6.5, *Hazardous Waste Control*, and 6.8, *Hazardous Substance Account*; and California Water Code, Division 7, *Water Quality*. The FFA requires compliance with 40 CFR 300, *CERCLA*, *RCRA*, and applicable state laws. Under Section 6.2 of the FFA, the Air Force agreed to undertake, seek adequate funding for, fully implement, and report on the following site tasks: remedial investigations, federal and state Natural Resource Trustee Notification and Coordination, feasibility studies, all response actions, and operation and maintenance of response actions.

The purpose of the *Alquist-Priolo Earthquake Fault Zoning Act* (California Public Resources Code, Division 2, Chapter 7.5, Section 2621, et seq.) is to provide for the adoption and administration of zoning laws, ordinances, rules, and regulations by cities and counties in implementation of the general plan that is in effect in any city or county.

The *Seismic Design for Buildings* (United States Army Corps of Engineers, Technical Instruction 809-04) and *Operation and Maintenance: Maintenance of Petroleum Systems* (Unified Facilities Criteria 3-460-03) address construction and maintenance standards for buildings, structures, and petroleum equipment.

#### 3.8.2 Fill Material

The use of fill material is to stabilize building or structure foundations, or for road base. Fill material can be naturally occurring rocks from approved borrow sites, or from recycled asphalt and concrete from demolition sites. The *Environmental Assessment for Borrow Sites at Edwards Air Force Base, California* (United States Army Corps of Engineers [USACE] and AFFTC,



1996) discusses the environmental condition, advantages, and disadvantages associated with the use of on-base borrow sites. It identifies five sites (1, 5, 21, 23, and 28) in addition to those previously in use. The locations of on-base material borrow sites are shown in Figure 8.

### **3.8.3 Seismic Activity**

The Mirage Valley Fault is a northwest-trending fault that extends from South Base through Main Base (Figure 9). The fault is seismically dormant with no record of historic earthquake activity along its trace. Earthquakes have occurred along local faults in the vicinity of Edwards AFB with magnitudes less than 4.4 on the Richter scale with no reported damage to structures. Near Bissell, about 2 miles northwest of the base, an earthquake of 4.6 to 6.5 on the Richter scale was recorded about 50 years ago. The earthquakes were accompanied by ground motion with little or no ground displacement or structural damage to buildings.

### **3.8.4 Environmental Restoration Program**

Release of hazardous chemicals such as petroleum products and solvents have caused both soil and groundwater contamination at Edwards AFB. Contaminated soil or groundwater may require physical removal or extensive remediation to ensure the protection of public health and safety. The remediation of these contaminated sites is being conducted under the ERP. The ERP was established to identify, investigate, assess, and clean up hazardous waste at former storage and disposal sites in compliance with *CERCLA*. In order to conduct remediation of the sites, Edwards AFB has been divided into ERP management areas termed operable units (OUs). The action alternatives discussed in this EA would be conducted within OUs 1, 2, 7, or 8 (Figure 10).

Remediation of groundwater contamination usually involves extraction and/or monitoring wells drilled to contaminated zones, or deeper. Depth to groundwater in the area ranges from 10 to over 50 feet bgs. Extraction wells are connected by a series of underground or aboveground pipes that convey contaminated fluids or product to treatment facilities for remediation and disposal. Monitoring wells are installed to observe the effects of groundwater remediation or track possible contamination from product spills. The well locations are based on the extent of the contaminated groundwater and the hydrogeology of the area. Since ERP sites require long-term remediation, field equipment such as extraction and monitoring wells, treatment facilities, and associated piping must remain undisturbed and avoided whenever possible.

Surface contamination from chemical storage and petroleum spill sites were also identified. These areas occur at various locations in the vicinity of the jet fuel distribution system. The sites were designated areas of concern (AOC) and were further investigated to characterize the extent of soil contamination. Contamination levels were found to be below action levels at the sites.

## **3.9 Socioeconomics**

Socioeconomic resources are the economic, demographic, and social assets of a community. Key elements include fiscal growth, employment, housing, construction materials, and retail services. The economic impact region for Edwards AFB is that area located within 75 miles of the Main Base, and includes portions of Los Angeles, Kern, and San Bernardino Counties.

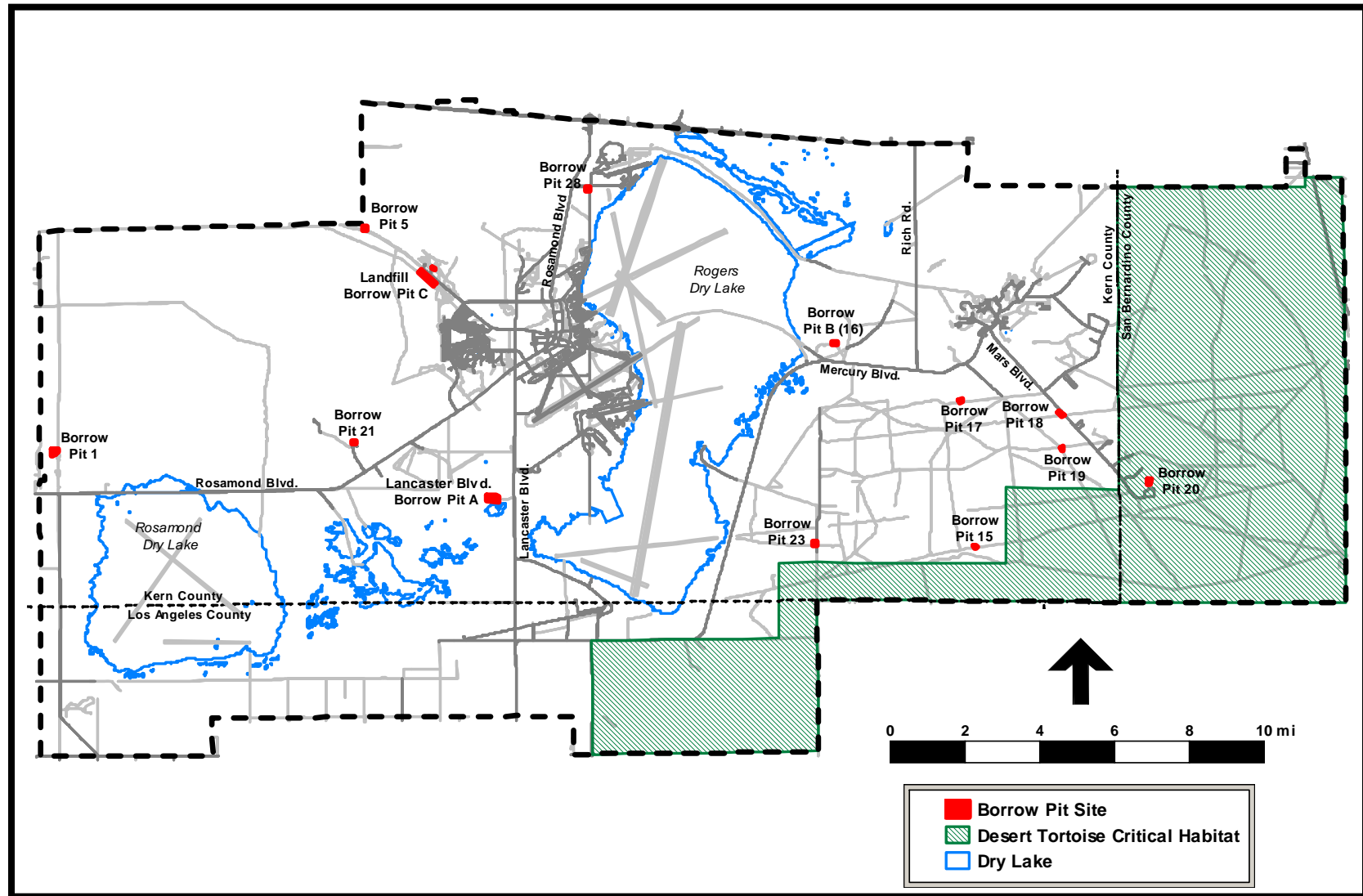


Figure 8. Locations of Borrow Sites for Fill Material

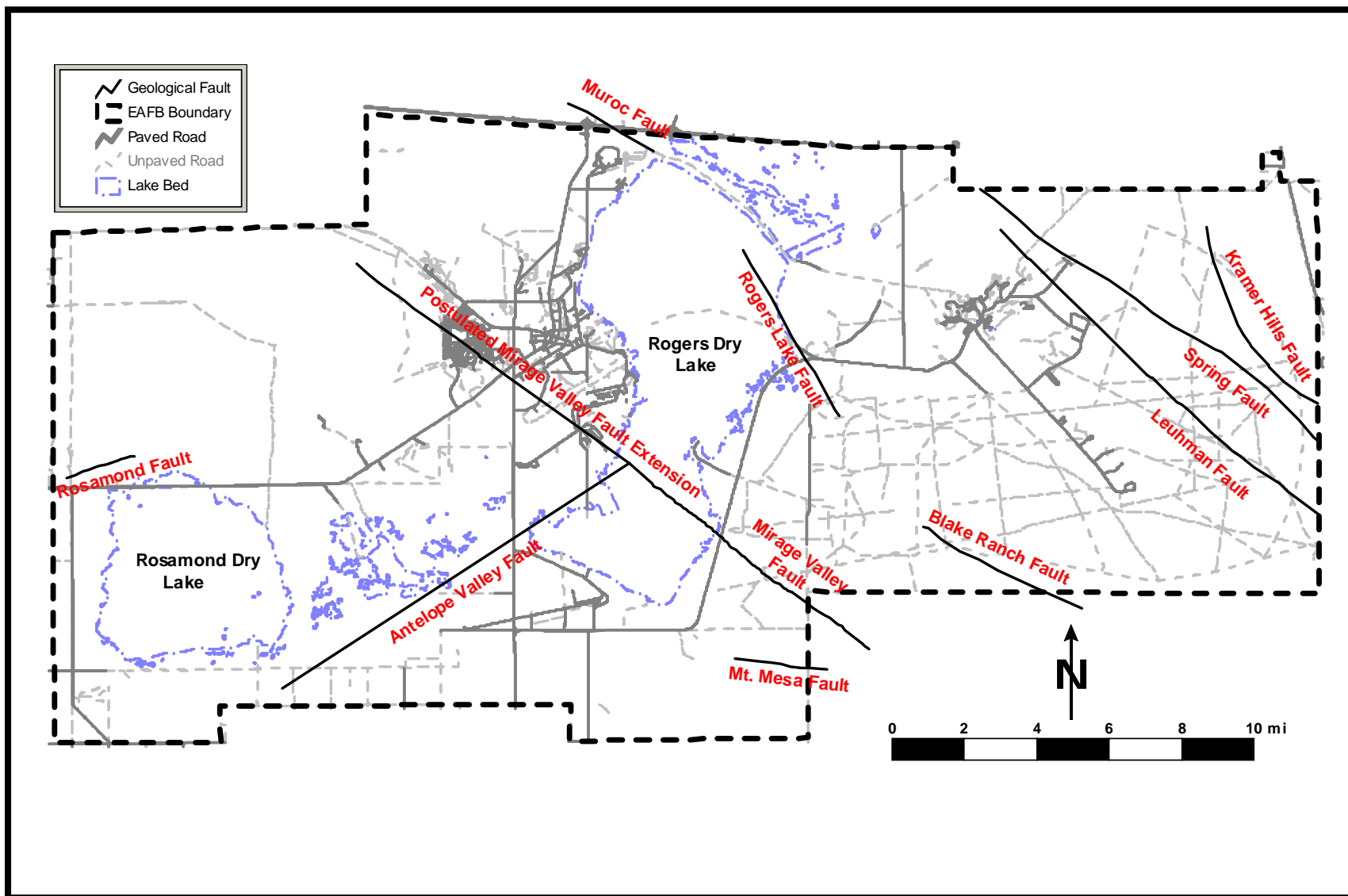


Figure 9. Locations of Geologic Faults on Edwards AFB

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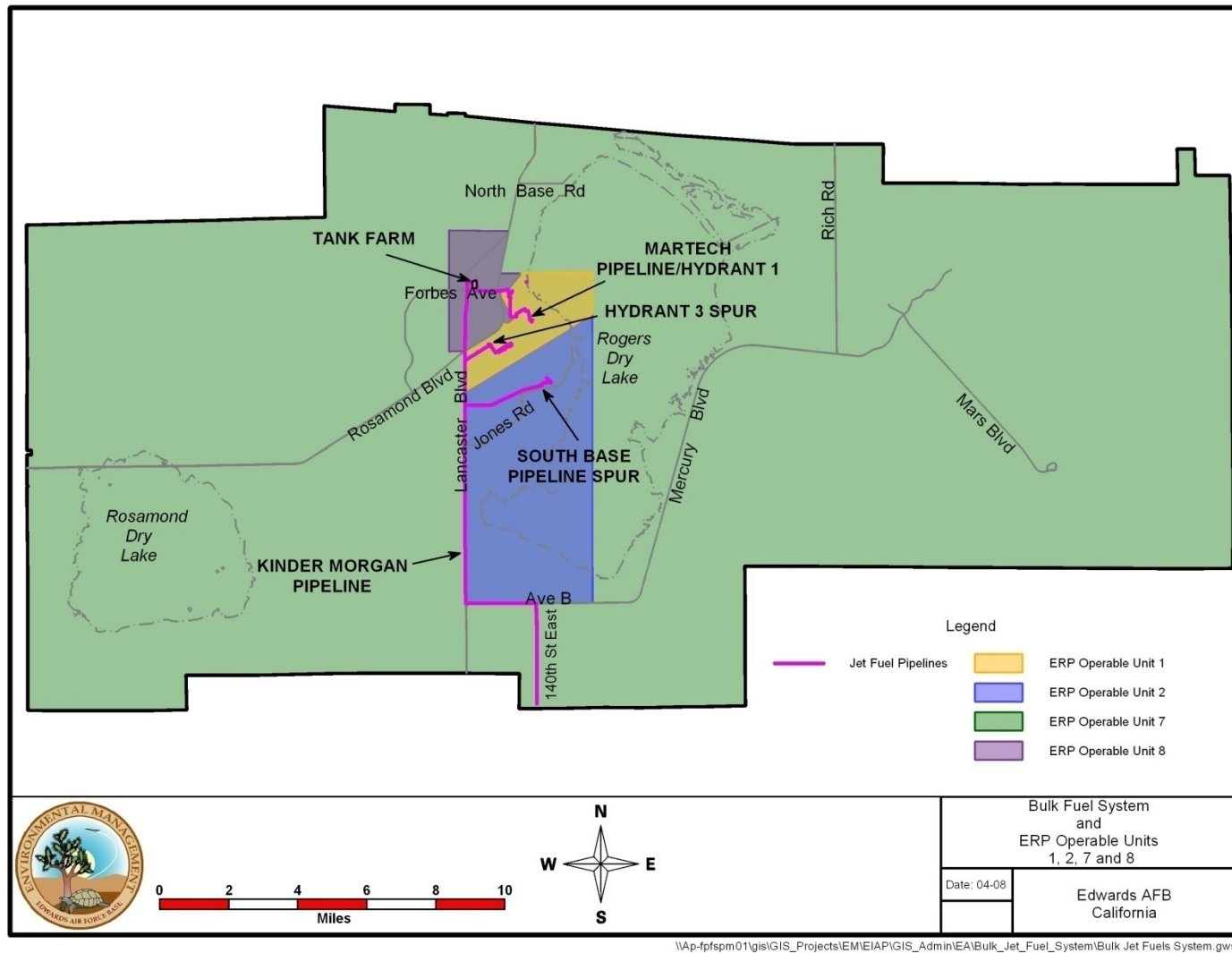


Figure 10. Location of the Affected Operable Units at Edwards AFB

However, a majority of potential socioeconomic impacts from base activities would be expected to occur within the Antelope Valley area.

The operations at Edwards AFB have a substantial impact on the economic status of the surrounding communities in the Antelope Valley region. The amount of goods and services purchased quarterly is approximately \$9.6 million (AFFTC, 2007), or about \$38 million annually.

### **3.10 Infrastructure**

Infrastructure refers to the physical components that are used to deliver utilities to the point of use. Elements of the base infrastructure system include water, wastewater, electricity, natural gas, liquid fuel pipelines, communication lines (e.g., telephone and computer), fuel transportation, and circulation systems (e.g., streets and railroads) that run in a network through the base.

#### **3.10.1 Regulatory Requirements/Guidance**

Title 49 CFR 195, *Transportation of Hazardous Liquids by Pipelines*, prescribes safety standards and reporting requirements for pipeline facilities used to transport hazardous liquids or carbon dioxide.

The *Elder California Pipeline Safety Act of 1981* (California Government Code, Title 5, Division 1, Part 1, Chapter 5.5) designates the CSFM as having exclusive safety regulatory and enforcement authority over intrastate hazardous liquid pipelines, and to act as the agent for the United States Secretary of Transportation to implement federal pipeline safety regulations for those portions of interstate pipelines located within California.

The CSFM's office is authorized to implement and exercise regulatory safety and enforcement over intrastate hazardous liquid pipelines under the *Hazardous Liquid Pipeline Safety Act (HLPSA)*, as amended (49 CFR 195). The AFFTC entered into a MOA with the CSFM on 14 March 2007. This MOA provides for regulatory jurisdiction and oversight of the safety of the fuel delivery system at Edwards AFB. The fuel delivery system consists of all components from the Kinder Morgan pipeline metering station to the final distribution points, except the Hydrant 1 pit loop and fill stand.

Air Force Instruction 23-201, *Fuels Management* (2004), establishes policies and procedures for fuel operations. It applies to all Air Force activities, including Air Force Reserve and Air National Guard units that receive, store, issue, perform quality control, and account for aviation fuels, ground fuels, cryogenic fluids, and missile propellants.

Air Force Instruction 23-204, *Organizational Fuel Tanks* (1994), provides guidelines and procedures for establishing and operating organizational fuel tanks and includes directions for preparing AF Form 500, *Daily and Weekly Fuel Report*. This AFI applies to every base and tenant organization using and managing organizational fuel tanks.

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Air Force Instruction 32-7044, *Storage Tank Compliance* (2003), implements the Environmental Quality AFPD. It identifies compliance requirements for underground and aboveground storage tanks and associated piping that store petroleum and hazardous substances.

Edwards AFB Instruction 23-2, *Entry, Exit and Control of Petroleum Transport Vehicles* (2005), implements requirements in AFI 23-201 and establishes procedures for entry, exit, and control of both military and civilian petroleum transport vehicles on Edwards AFB.

The *Uniform Building Code* (UBC) (International Conference of Building Officials, 1997) establishes minimum standards to safeguard life, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures.

The *Uniform Fire Code* (UFC) (National Fire Protection Association [NFPA] 1, 2006) establishes provisions necessary for fire prevention and fire protection.

The *National Electrical Code* (NFPA 70, 2008) is updated periodically and is adopted and enforced in all 50 states. It provides practical safeguarding of persons and property from hazards arising from the use of electricity by establishing requirements for electrical wiring and equipment in virtually all buildings. It specifically covers the installation of electric conductors and equipment in public and private buildings, industrial substations, and other premises (e.g., parking lots); installation of fiber-optic cable, wiring, and general electrical equipment; the use of electricity in specific occupancies and equipment; special conditions (e.g., emergency and standby power or conditions requiring more than 600 volts); and communication systems.

The *Uniform Plumbing Code* (UPC) (International Association of Plumbing and Mechanical Officials, 1997) establishes standards applicable to the erection, installation, alteration, repair, relocation, replacement, addition to, or maintenance of plumbing systems. These standards ensure protection of public health, safety, and welfare.

### **3.10.2 Transportation System**

Internal circulation on base is by way of paved and unpaved primary, secondary, and tertiary roads. Primary roads connect components such as the flightline, engineering and administration, and support areas to entry points. Secondary roads connect base components to one another and support facilities such as commercial or housing areas. Tertiary roads are unpaved access roads or residential streets with the housing area. Lancaster and Rosamond Boulevards are the two primary roads on Main Base. These two primary roads form the spine of the base transportation system, providing high-speed, high-volume access to connecting secondary and arterial roads and activity centers.

### **3.10.3 Utilities and Communication Systems**

Utilities require periodic upgrades in the project area. Utilities that may be encountered during digging and trenching operations at the project location could include water, electrical, communication, stormwater, sewer, and fuel lines. Water mains are typically Transite™ (e.g., asbestos cement) pipe. Utility service lines are galvanized steel or copper pipe. Sewer lines are

cast iron under foundation slabs and within 5 feet of buildings; outside the 5-foot line, sewer lines are vitrified clay pipes.

Communication systems on Edwards AFB include telephone, microwave, local area networks, and land mobile radios. The distribution system for communication equipment generally consists of copper-pair or fiber-optic cable and a communication manhole/conduit system.

### **3.11 Energy Conservation**

The general policy of the Air Force regarding energy is: “Energy is essential to the Air Force’s capability to maintain peacetime training, readiness, and credible deterrence; to provide quality of life; and to perform and sustain wartime operations. Energy is an integral part of the weapon system. The most fundamental Air Force energy policy goal is to assure energy support to the national security mission of the Air Force in a manner which emphasizes efficiency of use, effectiveness of costs, and independence from foreign sources for mission-essential operations” (AFFTC, 1995b).

#### **3.11.1 Regulatory Requirements/Guidance**

The *Energy Policy Act of 1992* (Energy Policy Act) (PL 102-486) requires federal entities to identify and accomplish all energy and water conservation measures with payback periods of less than 10 years.

Executive Order 13123, *Greening of the Government through Efficient Energy Management*, identifies the Department of Energy as the lead agency responsible for implementing the act and establishes seven goals regarding energy use that are applicable to federal agencies. These goals target reduction of:

- a. greenhouse gases;
- b. petroleum use;
- c. energy use by industrial, laboratory, and other facilities;
- d. total energy use (as measured at the source);
- e. water consumption (and associated energy use); and
- f. expanded use of renewable energy.

The Base Energy Plan serves as a component of the Base General Plan and documents the policies, direction of development, and specific projects associated with the base’s desire to meet the national energy goals established by the *Energy Policy Act*.

#### **3.11.2 Energy Consumption**

Edwards AFB uses electricity, natural gas/propane, and other petroleum-based products (i.e., gasoline, jet fuel, and diesel) to operate facilities, vehicles, fueling equipment, and aircraft. Consistent with federal law and Air Force policy, Edwards AFB has developed various programs and methods to reduce energy usage. These include awareness and education programs

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(including standards for heating and cooling) and installation of energy management control systems for cooling, heating, and lighting. Utility meters and efficient fueling systems are being installed to heighten awareness of consumption. Energy reduction projects are ongoing and include installation of swamp coolers, ceiling and wall insulation, double-pane windows, building foyers, and energy efficient lighting tubes. The use of solar energy is also being used whenever possible with the installation of photovoltaic cells throughout the base. In addition, construction of a solar farm to supplement current and future electrical energy needs has been proposed.



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## **4.0 ENVIRONMENTAL CONSEQUENCES**

### **4.1 Land Use**

The jet fuel distribution system is situated along utility corridors and on designated sites near the Main and South Base flightlines. These areas are compatible with the Base General Plan and IAW Edwards AFB design standards. Impacts to land use and the potential generation of FOD materials from the implementation of the alternatives are evaluated.

#### **4.1.1 Alternative A Impacts (Proposed Action)**

General maintenance, upgrades, and construction of the jet fuel distribution system would impact land use and the potential for the generation of FOD materials. No adverse impact to land use is anticipated, since construction would be conducted in areas approved for development.

##### **4.1.1.1 On-Base Land Use**

The general maintenance and upgrades to jet fuel distribution facilities would be within design standards consistent with the Base General Plan and AFI criteria. In addition, the siting of new facilities would require approval from the Base Planning and Zoning Committee. Projects would be implemented IAW guidelines approved by the planning and zoning committee. No significant impacts to land use would be anticipated.

##### **4.1.1.2 Foreign Object Damage Control**

Maintenance projects near flightline areas could produce debris consisting of nuts, bolts, screws, wood fragments, pieces of concrete, or asphalt that end up on the adjacent runway, taxiways, or the aprons. These objects could become airborne projectiles when caught up in the downdraft of hovering helicopters or from exhaust plumes during aircraft takeoff and landings. The airborne debris, referred to as FOD, could also be present near exposed ground surfaces such as cleared dirt areas. The FOD could puncture tires, damage engines, or cause possible injury or death to airfield personnel. To minimize the effects of FOD, standard operating procedures (SOPs) for FOD prevention would be implemented; therefore, no significant impacts would be anticipated.

#### **4.1.2 Alternative A Minimization Measures (Proposed Action)**

The following measures are required or recommended to minimize potential impacts to land use:

- a. Projects would be reviewed and approved by the Base Planning and Zoning Committee and Space Utilization Integrated Process Team (SUIPT) to ensure consistency with future development plans.
- b. All project personnel would use SOPs for the prevention of FOD IAW guidance documents included in Section 3.1.1. In addition, possible soil stabilization measures would be required during surface excavations to minimize potential FOD.

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c. The proponent/contractor shall contact Airfield Management for additional FOD reduction guidelines.

### **4.1.3 Alternative B Impacts**

Implementing this alternative would have similar impacts on land use as those discussed under Alternative A, although some facilities could be installed at new locations in adjacent properties. The facilities would be installed with concurrence of the Base Planning and Zoning Committee and SUIPT. No significant impacts to land use are anticipated under this alternative.

### **4.1.4 Alternative B Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

### **4.1.5 Alternative C Impacts (No Action Alternative)**

Under this alternative, impacts to land use would be intermittent because maintenance and upgrades to facilities would be performed on an as-needed basis. No significant impacts are anticipated since projects would be conducted in areas previously approved for development.

### **4.1.6 Alternative C Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

## **4.2 Air Quality**

Air quality is monitored on base to ensure compliance with local air district and federal air emission standards. Procedures to monitor and inventory GHG emissions on base are being established to comply with AB 32. All projects and missions on base are evaluated for the air emissions that would be generated to ensure compliance with air quality standards.

### **4.2.1 Alternative A Impacts (Proposed Action)**

Implementing the proposed action would impact air quality by producing a variety of air emissions from construction equipment, newly installed fueling stations, fuel pumps, fuel storage facilities, and fueling and defueling trucks and aircraft. Air emissions generated during the implementation of the proposed action were calculated and results were in conformity with the CAA (Appendix A). Greenhouse gas emission sources are also identified and procedures to inventory and monitor emissions are being compiled into a database for management purposes as required under California AB 32. Currently, statewide compliance standards for GHG have not been implemented. No significant impact to air quality is anticipated.

#### **4.2.1.1 National Ambient Air Quality Standards**

Air quality standards are monitored to determine impacts to base air quality. Short-term degradation in air quality may be experienced during maintenance projects along pipeline easements. Fugitive dust emissions (PM10) could be generated by grading activities, constructing access roads, and driving off of paved roads. Emissions from construction

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equipment and vehicles are computed to determine the amount of VOC emissions. Calculations are made to determine compliance with the local and federal air quality requirements.

### 4.2.1.2 Local District Control

Maintenance and construction projects would involve use of equipment equal to or greater than 50 bhp. If such equipment remains on base for more than 45 days, an air quality operational permit is required from the KCAPCD. This would ensure that generated air emission would be in compliance with local air emission standards.

### 4.2.1.3 Conformity Requirements

Total air emissions from the use of construction equipment were estimated and totaled 1.40 tons of NO<sub>x</sub> and 0.23 tons of VOCs (Appendix A). The concentrations are *de minimis* under 40 CFR 51.853/93.153(b)(1) and are below the eastern KCAPCD *de minimis* levels as determined from air emission calculations. The air emissions from base missions are less than 100 tons per year for all criteria pollutants for a maintenance facility. The basis for the calculations and a copy of the conformity letter can be found in Appendix A.

The relevant and applicable *de minimis* levels for criteria pollutant emissions in all air districts are less than the corresponding 10-percent threshold values. The proposed action has emissions that are below eastern KCAPCD *de minimis* levels as determined from air emission calculations. Thus, the proposed action would not have a regional effect in the eastern KCAPCD. Estimated air emissions from the proposed project are less than 100 tons per year for all criteria pollutants. These emissions are less than the 10-percent threshold values for the adjacent air quality districts, the MDAQMD and AVAQMD, identified in Section 3.2.5 of this report; therefore, the proposed project would not have a regional effect in these air districts.

Toxic air emissions may be generated as a result of operating portable or stationary ICEs, painting operations, and/or the use of solvents, cleaners, and adhesives. These emissions are regulated under the *Air Toxics "Hot Spots" Information and Assessment Act* and would require inclusion in the Toxic Emissions Inventory Report provided to the KCAPCD, MDAQMD, AVAQMD, or CARB by Edwards AFB.

### 4.2.1.4 Greenhouse Gases

Greenhouse gas emissions would occur naturally as fugitive emissions along the fuel pipeline and from sources that would include, but not be limited to, hydrant stations and pumping units during general maintenance; fuel storage facilities; fueling/defueling operations; and exhaust from tanker trucks, personal vehicles, and ICE equipment. In compliance with AB 32, Environmental Management is establishing procedures to monitor and inventory emission sources, and calculate GHG emissions where appropriate.

#### 4.2.2 Alternative A Minimization Measures (Proposed Action)

The following measures are required or recommended to minimize potential impacts to air quality:

a. The following are applicable to unpaved roads, construction and demolition activities, earth moving, and open storage piles.

- (1) Maintain speed limits on unpaved roads on base to between 5 and 35 mph.
- (2) Suspend grading, disking, and other earthwork projects at wind speeds exceeding 25 mph.
- (3) Water or apply dust suppressants to roads and open areas, upon which work is performed, in order to suppress dust. If winds produce visible emissions in excess of 20 percent opacity (Ringlemann 1), erect wind barriers.
- (4) Cover all vehicles hauling bulk materials or debris.
- (5) Compact by rolling.
- (6) Install temporary coverings for open storage piles.
- (7) Restore roads and other areas by revegetation when the area is no longer needed for base operations.

b. All chemicals or materials procured for projects by any means other than the HAZMAT Pharmacy Program shall be reported to Environmental Management for purposes of inclusion in the base air emission report.

c. The project shall comply with all applicable KCAPCD, AVAQMD, and MDAQMD rules and regulations.

(1) The proposed project shall comply with all applicable rules and regulations as identified in AFI 32-7040, *Air Quality Compliance and Resource Management* (2007).

(2) All paints, other than specialty coatings, shall comply with, VOC requirements.

d. This project may utilize ICEs over 50 bhp rating (e.g., welders, generators, or compressors). Any ICEs operated on Edwards AFB require a permit from the local air agency. All portable engines and equipment with a rating of 50 bhp and greater must either have an air permit or be registered under the CARB Statewide Portable Equipment Registration Program (PERP). This regulation is posted at the CARB webpage at <http://www.arb.ca.gov/portable/perp/perp.htm>.

e. The proposed projects shall use diesel fuel meeting CARB specifications including the 15 parts per million sulphur-content requirement. All mechanical equipment should be kept in good working order according to applicable technical orders and equipment maintenance manuals to reduce emissions to acceptable levels.

f. All earthwork activities should be planned and conducted to minimize the duration that soils would be left unprotected. The extent of the area of disturbance necessary to accomplish the project should be minimized. Exposed surfaces should be periodically sprayed with water or

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soil binder. Use of soil binders should be coordinated with Environmental Management because some soils binders may contain hazardous substances.

(1) Ground-disturbing activities should be delayed during high-wind conditions (over 25 mph).

(2) Visible emissions (e.g., dust or smoke) from the proposed projects shall not exceed the limitations as outlined by the local air district.

(3) All vehicles transporting fill material or construction debris would require a cover to reduce PM10 emissions during transport.

g. Projects shall not discharge from any source, whatsoever, such quantities of air contaminants or other material that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public; would endanger the comfort, repose, health, or safety of any such persons; or cause or have a natural tendency to cause injury or damage to business or property.

h. Personnel conducting work on refrigeration units must be certified by the U.S. EPA for the type of equipment they are to work on. Equipment used to recover or service these units must also be certified by the U.S. EPA.

i. To comply with AB 32, projects shall be coordinated with Environmental Management so that an inventory of possible GHG emission sources and calculation of possible fugitive gases can be made.

### **4.2.3 Alternative B Impacts**

Implementing this alternative would have the same impacts to air quality as discussed under Alternative A. Air emissions would be calculated and GHG emissions established as in Alternative A. No significant impacts are anticipated.

### **4.2.4 Alternative B Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

### **4.2.5 Alternative C Impacts (No Action Alternative)**

Under this alternative, impacts to air quality, including GHG, would be intermittent because maintenance of facilities and construction projects would be performed on an as-needed basis. No significant impacts are anticipated since projects would be conducted as needed and air quality would be monitored to ensure compliance with air regulations.

### **4.2.6 Alternative C Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

## **4.3 Water Resources**

The quality of surface-water runoff from construction sites would be affected by excess sediment debris.

#### **4.3.1 Alternative A Impacts (Proposed Action)**

Excavation and surface grading along the pipeline easement would alter the natural drainage patterns along the project sites exposing additional areas to possible erosion. Newly exposed soils would be available to surface-water runoff during seasonal rains resulting in excess sediment pollutants in the stormwater. No significant impacts to water resources are anticipated since SOPs would be in place to control the sediment runoff.

#### **4.3.2 Alternative A Minimization Measures (Proposed Action)**

To minimize potential impacts to water resources, construction activities involving grading, clearing, or excavating 1 or more acres of land would require a *SWPPP*. The plan shall include site-specific control measures and best management practices that would be implemented during construction activities to ensure that nonstormwater discharges are contained and prevented from entering the wastewater system. Control of soil erosion from surface-water run-off would control sediment deposition in drainages and improve water quality.

All temporary and/or permanent connections to the base potable water system (e.g., water mains, fire hydrants, or hose-bib connections) shall be equipped with a backflow device as approved by Base Civil Engineering (BCE).

#### **4.3.3 Alternative B Impacts**

Implementing this alternative would have the same impacts to water resources as discussed under Alternative A. No significant impacts are anticipated to water resources since SOPs would be in place to control sediment runoff.

#### **4.3.4 Alternative B Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

#### **4.3.5 Alternative C Impacts (No Action Alternative)**

Under this alternative, maintenance of facilities and construction projects would be conducted on an as-needed basis. Impacts to water resources would be the same as those discussed under Alternative A. No significant impacts are anticipated to water resources since SOPs would be in place to control sediment runoff.

#### **4.3.6 Alternative C Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

### **4.4 Safety and Occupational Health**

General maintenance and systems testing of the jet fuel distribution system has the potential to expose field personnel to certain hazards and safety concerns. Compliance with OSHA standards would mitigate these hazards and ensure the safety of field personnel.

#### **4.4.1 Alternative A Impacts (Proposed Action)**

Implementing this alternative would have an impact on personnel health and safety from exposure to jet fuel handling, fugitive gas emissions, the handling of vapors, and fieldwork conditions. No significant impact to personnel health and safety is anticipated, since field safety practices would be in place

##### **4.4.1.1 Exposure Hazards**

There is a potential for personnel to be exposed to fugitive gas vapors, hazardous noise, ACMs, heavy-metal paints, and hazards associated with working outdoors.

Personnel may be exposed to hazardous noise levels, which include noise levels exceeding 85 dB. These noise levels may be encountered along the flightlines during flight tests and as a result of using construction equipment during maintenance and/or construction activities.

Fugitive gas vapors may be released during maintenance of storage tanks, fuel pumps, and fuel pipelines. Asbestos-containing materials could be encountered in pipe fittings during maintenance or upgrades to the pipeline and hydrant systems or during the demolition of building structures and the fuel distribution system. Exposure to heavy-metal paints during maintenance activities would be of concern if worn or chipping paint is encountered.

Personnel may be exposed to heat stress during the summer months, potential venomous snakes, and possible exposure to valley fever spores under certain environmental conditions.

##### **4.4.1.2 Safety**

Safety concerns refer to the proper handling of the fuel delivery system on base. Guidance and regulatory procedures are established by the state of California, Air Force, and CSFM to manage fuel handling, minimize the risk of fuel spills, and eliminate fire hazards.

#### **4.4.2 Alternative A Minimization Measures (Proposed Action)**

The following measures are required or recommended to minimize potential impacts to personnel health and safety:

a. Operation of equipment may generate noise above acceptable levels established by OSHA regulations. The proponent/contractor shall be responsible for implementing hearing protection measures for their employees. If federal employees are involved in work activities, AFOSH regulations must be followed and Bioenvironmental Engineering shall be contacted for specific requirements.

b. Major noise sources on the flightline are from aircraft and helicopter operations, engine testing, and the operation of powered tactical support equipment. Field workers may be exposed to increased noise levels that may be above acceptable levels established by federal, state, and AFOSH regulations. Contract field personnel shall be responsible for implementing OSHA hearing protection measures. Where federal employees are involved in project work, contact Bioenvironmental Engineering for specific requirements.



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c. Ensure all residual fuel is removed from pipelines and delivery systems prior to general maintenance to minimize exposure to fuel vapors and potential fire hazards. The use of proper PPE during project activities shall be coordinated with Bioenvironmental Engineering.

d. The proponent/contractor should consult with the Asbestos Operations Officer at Civil Engineering and Bioenvironmental Engineering to determine any safety concerns or use proper engineering controls regarding the potential for exposure to ACM or heavy-metal based paints.

e. The proponent/contractor shall contact the Asbestos Operations Officer at Civil Engineering regarding the occurrence and possible abatement of ACM, LBP, and heavy-metal paints.

f. Confined space, as defined by *Occupational Safety and Health Standards, Subpart J, General Environmental Controls, Permit-Required Confined Spaces*, OSHA Standards (29 CFR 1910.146 [reference 2]), is a space where the size and shape allows a person to enter; has limited openings for workers to enter and exit; and is not designed for continuous occupancy. Confined spaces are classified as two types, nonpermit- and permit-required. Nonpermit-required confined space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm. Permit-required confined spaces are defined as having one or more of the following characteristics:

- (1) Contains or has potential to contain a hazardous atmosphere;
- (2) Contains a material with a potential to engulf an entrant;
- (3) Has an internal configuration that could trap or asphyxiate an entrant by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; and
- (4) Contains any other recognized serious safety or health hazard.

g. During work outdoors, the proponent/contractor should be properly attired for the environment and be aware of possible encounters with venomous snakes and spiders, and potential heat stress-related conditions during the summer months.

h. Project activities involving welding, torching, cutting, and brazing require an AF Form 592, *USAF Welding, Cutting and Brazing Permit* (Hot Work Permit) from the base Fire Department. For further information on hot work permits, contact the base Fire Department.

### 4.4.3 Alternative B Impacts

Implementing this alternative would have the same impacts on personnel health and safety as those discussed under Alternative A. No significant impacts are anticipated since SOPs would be in place to ensure personnel health and safety.

### 4.4.4 Alternative B Minimization Measures

Minimization measures would be the same as those discussed under Alternative A.

### 4.4.5 Alternative C Impacts (No Action Alternative)

The impacts would be intermittent since project implementation would be conducted on an as-needed basis. Impacts on personnel health and safety would be the same as those discussed

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under Alternative A. No significant impacts are anticipated since SOPs would be in place to ensure personnel health and safety.

### **4.4.6 Alternative C Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

## **4.5 Hazardous Materials/Waste and Solid Waste**

Maintenance, upgrades, construction, or expansion to the pipeline, pumps, and fueling stations would involve the use of HAZMAT and generation of hazardous or solid waste.

### **4.5.1 Alternative A Impacts (Proposed Action)**

The maintenance, upgrade, construction, and expansion of the jet fuel distribution system, including storage tanks, would require the use of HAZMAT and the generation of waste. Exposure to ACM and LBP would be encountered during the replacement of some pipeline insulations and construction debris during the demolition of buildings and structures. No significant impacts are anticipated since SOPs to control the use of HAZMAT and generation of hazardous and solid wastestreams would be in place.

#### **4.5.1.1 Hazardous Materials**

Hazardous materials used and handled during the maintenance, construction, or expansion of the distribution system would include, but not be limited to, aviation fuels, hydraulic oils, acids, corrosives, glycols, compressed gases, paints and paint thinners, cleaning solvents, sealants, adhesives, fire retardants, and asphaltic material. All HAZMAT used would be from local sources or the base HAZMAT pharmacy. Any new HAZMAT brought on base would require MSDS identification.

#### **4.5.1.2 Hazardous Waste**

The use of HAZMAT would result in the generation of hazardous waste (i.e., solvents, waste oils from oil/water separators, paint waste, oily rags, ACM, and LBP) that require proper handling and disposal. Hazardous waste generated through maintenance, construction, or expansion of the jet fuel distribution system would be similar in type, but of higher volume than presently generated.

#### **4.5.1.3 Solid Waste**

Maintenance, construction, and expansion of the jet fuel distribution system would generate solid waste that could include concrete, asphalt, corrugated metal, piping, fuel system equipment, filtration systems, electrical panels, and storage tanks. Some of the materials such as concrete and asphalt waste would be recycled, and the corrugated metal, piping, and storage tanks would be sold as scrap metal when possible. Recycling and reusing appropriate materials would reduce the amount of solid waste discarded in landfills, resulting in a positive impact to the solid waste management program.

#### **4.5.2 Alternative A Minimization Measures (Proposed Action)**

The following measures are required or recommended to minimize potential impacts due to the use of HAZMAT and the generation of hazardous and solid waste:

a. All chemicals/materials procured for projects by any means other than the HAZMAT Pharmacy Program shall be reported to Environmental Management for purposes of inclusion in the base HAZMAT inventory.

b. Electrical equipment and testing instruments may contain mercury and/or PCB materials. Fixtures containing mercury or PCBs would be subject to hazardous waste requirements during disposal. The proponent/contractor shall coordinate disposal with Environmental Management.

c. All new electrical equipment procured for the project (e.g., switches and transformers) shall be specified to contain no detectable PCBs.

d. Proponent/contractor should ensure all HAZMAT are authorized and managed in compliance with applicable sections of EAFBI 32-119. This instruction is applicable to all organizations on Edwards AFB, including tenants and contractors. Questions regarding the HMMP should be directed to Environmental Management.

e. Hazardous wastes are subject to land disposal restriction requirements. Signed hazardous waste disposal manifests would be required for all hazardous waste that may be generated on this project to include ACM; lead-, mercury-, chromium-, or other heavy metal-based paints; and/or PCB-containing wastes prior to transportation for off-site disposal to a U.S. EPA-approved landfill. The proponent/contractor shall submit all manifests for signature to Environmental Management.

e. The proponent/contractor shall ensure that all hazardous waste management practices comply with all applicable sections of AFI 32-7042 and the HWMP. Contact Environmental Management for additional questions or guidance.

f. The disposal of solid waste shall be coordinated with the Environmental Management Solid Waste and Civil Engineering landfill program managers to determine disposition of the wastestream. Some of the solid waste may be recycled, reused, or transported to a state-licensed landfill.

g. The contractor shall be responsible for segregating wastestreams for recycling or reuse.

h. This project will generate construction/demolition and other solid waste. The proponent/contractor shall be responsible for transporting solid waste to a state-licensed solid waste facility; and for the segregation of recyclables for disposal.

i. Concrete rinsate (waste) generated from concrete trucks during project activities shall be discharged in a designated area within the project site. At project completion, disposal of concrete waste in an approved landfill shall be the responsibility of the contractor.

j. Testing of the soil surrounding storage tanks will be required and should be included in the work plan being submitted to Kern County Environmental Health and Safety.

k. Work on pipeline facilities (e.g., pipelines, breakout tanks, or pump stations) must comply with the MOA with the California State Fire Marshal.

### **4.5.3 Alternative B Impacts**

Implementing this alternative would have the same impacts regarding the use of HAZMAT and generation of hazardous or solid waste as those discussed under Alternative A. No significant impacts are anticipated since SOPs would be in place to control the use of HAZMAT and generation of hazardous or solid waste.

### **4.5.4 Alternative B Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

### **4.5.5 Alternative C Impacts (No Action Alternative)**

Under this alternative, projects would be conducted intermittently on an as-needed basis with impacts being the same as those discussed under Alternative A. No significant impacts are anticipated since SOPs would be in place to control the use of HAZMAT and generation of hazardous or solid waste.

### **4.5.6 Alternative C Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

## **4.6 Biological Resources**

The current jet fuel distribution system areas have been surveyed for the presence of biological resources and their habitat. This information is documented under an existing BO. These areas are not considered critical biological habitats. In the adjacent properties, biological resources may be covered under existing BOs; however, in those properties that have not been fully surveyed, a biological assessment would be required to determine the presence of critical biological resources.

### **4.6.1 Alternative A Impacts (Proposed Action)**

Under this alternative, the project activities would be located in previously disturbed areas and within the area of the Main and South Base BO. Critical habitats would not be impacted. Project activities would be coordinated with the Natural Resources group to ensure that information of sensitive biological resources in the area is conveyed to project proponents and field personnel prior to any work along the fuel distribution system. No significant impacts to biological resources are anticipated.

### **4.6.2 Alternative A Minimization Measures (Proposed Action)**

The following measures are required or recommended to minimize potential impacts to biological resources:

- a. All project personnel working in the area shall attend desert tortoise awareness training prior to commencing work or visiting the work site no less than 3 days and no more than 5 days before work begins to schedule a half-hour desert tortoise awareness briefing.

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b. A desert tortoise presurvey is required prior to commencing work in areas not covered by a BO. The presurvey will be scheduled by contacting the Environmental Management Natural Resources group no less than 3 days and no more than 5 days before work begins.

c. Project personnel may encounter the desert tortoise, federally listed as a threatened species. The proponent/contractor shall be responsible for ensuring that all project personnel complete a desert tortoise education program no less than 3 days and no more than 5 days before the activity to schedule the briefing.

d. If desert tortoises are found within the project site prior to or during construction and cannot be avoided, consultation with USFWS may need to be accomplished. Coordinate findings with the Environmental Management Natural Resources contractor.

e. All workers shall be instructed that their activities must be confined to locations within the project area and not stray beyond the work area.

f. Open excavations of any kind created during project activities shall be secured at the end of each day by backfilling, placing a cover over the excavation, installing Environmental Management-approved temporary desert tortoise fencing, and/or by creating a 3:1 slope at each end of the ditch.

g. Excavations left unsecured during the workday shall be checked three times per day (morning, midday, and late afternoon) for trapped animals. If any animals are found in an excavation, notify the Environmental Management Natural Resource contractor immediately.

h. Project personnel shall remain on existing roads and use previously disturbed areas to store and stage equipment and materials. Speed limits on dirt roads within the project area shall be less than 20 mph.

i. All project personnel shall inspect under all vehicles and equipment for desert tortoises prior to operation. If a tortoise is present, the vehicle shall not be moved and the Environmental Management Natural Resource contractor shall be notified.

j. Any pipes stored within the area shall be capped on open ends or elevated at least 6 inches off the ground to prevent entry by desert tortoises or other wildlife.

k. All trash shall be contained within raven-proof (covered) containers and removed from the project site.

l. No pets or fire arms shall be allowed on the project site.

m. Project activities are not permitted between dusk and dawn unless preauthorized by Environmental Management.

n. The maintenance of buildings or structures should occur outside of the bird nesting season (February to August). Bird species on base are protected under the *MBTA* and a biological survey would be required to determine the presence of nesting birds prior to the start of any project. If maintenance to buildings or structures cannot occur outside of the nesting season and an active nest is present, a depredation permit from the USFWS must be obtained prior to commencement of activities.

o. Design and construction of proposed facilities should minimize potential nesting sites for birds. Migratory birds nest in the area yearly (nesting season is typically February to August, but some birds can nest yearround) and are protected under the *MBTA*. Nests may occur on the

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ground, in burrows or culverts, in vegetation (such as cattails), or on manmade structures (such as buildings, radar towers, static plane displays, catwalks, and rafters). Antiperching devices shall be installed to deter birds from perching on structures.

p. If bat roosts are encountered, the bats shall be removed by an authorized biologist.

q. Revegetation/restoration may be required based on the level of disturbance created from project activities. Revegetation/restoration shall be IAW the *Edwards Air Force Base Revegetation Plan* (AFFTC, 1994).

### 4.6.3 Alternative B Impacts

Implementing this alternative would have the same impacts to biological resources as discussed under Alternative A. Additional biological assessments would be required in those adjacent properties not covered in an existing BO. Since SOPs would be in place to protect biological resources, no significant impacts are expected.

### 4.6.4 Alternative B Minimization Measures

Minimization measures would be the same as those discussed under Alternative A with the addition of: Conduct biological assessments in those adjacent properties not covered by an existing BO. Coordination with Environmental Management Natural Resources personnel would be required to ensure information regarding biological resources is conveyed to field personnel.

### 4.6.5 Alternative C Impacts (No Action Alternative)

Under this alternative, projects would be conducted intermittently on an as-needed basis. Impacts to biological resources would be the same as those discussed under Alternative A. No significant impacts are anticipated since the areas have already been surveyed and cleared of biological resources, and SOPs would be in place to ensure protection of biological resources.

### 4.6.6 Alternative C Minimization Measures

Minimization measures would be the same as those discussed under Alternative A.

## 4.7 Cultural Resources

Cultural resource surveys have been conducted along the main pipeline easement adjacent to Lancaster Boulevard and the hydrant spur lines; at the hydrant stations and fuel storage tank farm; and in the main runway area. Sensitive cultural resource sites have not been identified in these previously disturbed areas. In the adjacent properties, cultural resources have not been fully identified and would require further surveys to characterize the areas.

### 4.7.1 Alternative A Impacts (Proposed Action)

Implementation of the proposed action would be conducted along easements and in areas previously disturbed and cleared of cultural resources. No significant impacts to cultural resources are anticipated.

#### **4.7.2 Alternative A Minimization Measures (Proposed Action)**

The following measures are required or recommended to minimize potential impacts to cultural resources:

- a. Early in the planning process, the proponent/contractor shall coordinate project activities with the BHPO to identify sensitive cultural resources in the area, areas to avoid, and monitoring requirements.
- b. If artifacts or bones are discovered during project activities, the project activities **shall cease immediately** and the project foreman shall immediately contact Environmental Management.
- c. The proponent/contractor shall ensure all field workers complete a cultural resources awareness education program before commencing fieldwork. The Cultural Resources contractor shall be notified **at least 3 days prior** to starting work to arrange for an awareness briefing. If additional personnel are brought onto the project after the initial briefing, then the proponent/contractor must contact Environmental Management for the new personnel to receive a cultural resources briefing **prior to** working on the project.

#### **4.7.3 Alternative B Impacts**

Implementing this alternative would have the same impacts on cultural resources as discussed under Alternative A. An additional cultural resource assessment would be required in adjacent properties not previously surveyed. No significant impacts are anticipated since SOPs would be in place to ensure protection of cultural resources.

#### **4.7.4 Alternative B Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

#### **4.7.5 Alternative C Impacts (No Action Alternative)**

The projects would be conducted intermittently on an as-needed basis along easements and in previously disturbed areas. Under this alternative, the impacts to cultural resources would be the same as those discussed under Alternative A. No significant impacts are anticipated since the areas have already been surveyed and cleared of cultural resources and SOPs would be in place to ensure protection of cultural resources.

#### **4.7.6 Alternative C Minimization Measures**

Minimization measures would be the same as those discussed under Alternative A.

### **4.8 Geology and Soils**

Fill material would be used to infill excavation sites, and construct road bases or building pads.

A geologic fault occurs in the area and has been mapped beneath the main pipeline easement. The fault is one of several mapped on base that have remained dormant in recent history.

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Environmental Restoration Program sites are located in the vicinity of the jet fuel distribution system and adjacent properties. The restoration sites are currently in various stages of remediation or being monitored. Areas of concern have been investigated and contamination was found to be below action levels. These sites have been closed with concurrence from regulatory agencies.

### **4.8.1 Alternative A Impacts (Proposed Action)**

Implementing the proposed action could require the use of fill material to infill excavations, and construct road bases or foundations for building pads. Fill material could be obtained from borrow sites on and off base. Pipelines, structures, and buildings in the vicinity of the Mirage Valley fault and subsidiary faults would be constructed according to current earthquake building codes and design standards. The geologic faults within the base are dormant with no record of seismic activity or significant surface displacement in recent history. No significant impacts are anticipated from the use of fill materials and construction along the geologic fault.

Environmental Restoration Program sites would be encountered during the implementation of the proposed action. The ERP sites are within OUs and being remediated for contaminated groundwater. Surface equipment used to remediate the ERP sites could be encountered in some locations which would require identification prior to the start of the projects.

#### **4.8.1.1 Fill Material**

Fill material is a nonrenewable natural resource that is available at Edwards AFB. Much of the fill material would most likely be obtained from an approved on-base borrow site. However, approved off-base sources may be used to meet specific soil-type requirements and/or to augment and avoid depletion of finite, on-base resources.

Trenching and grading activities expose soils to wind erosion. Due to the high winds that are common to the Mojave Desert, exposed soils can contribute to wind erosion, PM10 emissions, and reduction in visibility due to particles in the air. If recommended minimization measures are implemented, no significant adverse impacts are anticipated.

#### **4.8.1.2 Seismicity**

The northwest-southeast extension of the postulated Mirage Valley Fault is mapped through Main Base. The fault is seismically dormant with no record of earthquake activity or surface displacement in recent history. Seismic activity is occurring throughout the region with magnitudes of less than 4.0 on the Richter scale. These magnitude quakes produce little or no surface motion or structural damage to facilities. If recommended minimization measures are implemented, no significant adverse impacts are anticipated.

#### **4.8.1.3 Environmental Restoration Program**

Areas of contaminated groundwater are being remediated under the ERP within OUs 1, 2, 7, and 8. The groundwater is contaminated with solvents and petroleum products and is found between 10 and 50 feet bgs and greater. The depth to groundwater is at sufficient depths that contamination levels would not cause a risk to human health or the environment. Project activities within some of the ERP sites would encounter remediation equipment such as monitoring and



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extraction wellheads, groundwater extraction equipment, and surface or subsurface piping. Locating the field equipment prior to project implementation would be required so that the equipment will not be disturbed.

Scattered throughout the area are former chemical storage and petroleum product spill sites. These sites were identified as areas of concern and have been investigated. Sites with surface contamination below action levels were designated sites with no further action and were closed with concurrence from regulatory agencies.

### 4.8.2 Alternative A Minimization Measures (Proposed Action)

The following measures are required or recommended to minimize potential impacts to geology and soils:

a. All earthwork activities shall be planned and conducted to minimize the generation of dust. The area of disturbance necessary to accomplish the project shall be minimized as a dust-control measure. Ground-disturbance activities (i.e., vehicular traffic, grading, and digging) shall be delayed during high-wind conditions (in excess of 25 mph).

(1) Exposed surfaces shall be periodically sprayed with water.

(2) Asphalt debris would be recycled and incorporated into fill material to reduce the dependency of existing resource materials.

b. Project activities may be located in close proximity to ERP extraction wells, monitoring wells, piping, and remediation equipment. Prior to onset of maintenance, upgrade, or construction activities, the proponent/contractor shall contact Environmental Management Restoration Branch for location of ERP equipment. Damage to ERP equipment must be avoided.

c. Fill material may be acquired from approved borrow sites. The proponent/contractor shall specifically establish locations, perimeters, and dimensions of the approved sites; and coordinate the proposed area with Environmental Management to ensure endangered, threatened, and sensitive species are not present in the area.

d. Design standards to be followed include: USACE Technical Instruction 809-04, *Seismic Design for Buildings* (1998); Unified Facilities Guide Specifications 13 48 00.00 10, *Seismic Protection for Mechanical Equipment* (2007); UBC Chapters 23, 26, 27, and 29 with the applicable California Supplements; and Kern County building codes.

e. This project would require a Digging Permit. The proponent/contractor shall coordinate the digging permit for specific requirements.

### 4.8.3 Alternative B Impacts

Implementing this alternative would upgrade and construct facilities in adjacent properties. The impacts to geology, soils, and ERP sites would be similar to those discussed under Alternative A. Projects located in adjacent properties would require coordination with Environmental Management to locate ERP sites and ensure remediation equipment is not damaged. No significant impact from the use of fill material or construction along the geologic fault is anticipated, since recognized borrow sites would be used, and the geologic fault is currently seismically dormant. In addition, no significant impact from active ERP sites is

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anticipated since the sites are under remediation and contaminated groundwater is at sufficient depth that would not cause a risk to human health and the environment during any construction.

### **4.8.4 Alternative B Minimization Measures**

Minimization measures would be similar to those discussed under Alternative A. Projects conducted in adjacent property would be coordinated with Environmental Management to locate ERP sites and to ensure remediation equipment is not damaged.

### **4.8.5 Alternative C Impacts (No Action Alternative)**

Under this alternative, projects would be conducted intermittently on an as-needed basis. The impacts to geology, soils, and ERP sites would be similar to those discussed under Alternative A. No adverse environmental impacts are anticipated since recognized borrow sites would be used and seismic activity along the geologic fault is dormant. In addition, no significant impact from active ERP sites is anticipated, since the sites are under remediation and contaminated groundwater is at sufficient depth that the proposed alternative would not be affected.

### **4.8.6 Alternative C Minimization Measures (No Action Alternative)**

Minimization measures would be similar to those discussed under Alternative A.

## **4.9 Socioeconomic**

The continued maintenance, upgrade, construction, and expansion to the jet fuel distribution system would have a positive impact to the socioeconomics of the Antelope Valley region. The purchase of goods and services and stabilizing employment opportunities would continue.

### **4.9.1 Alternative A Impacts (Proposed Action)**

The cost to maintain, upgrade, construct, or expand facilities along the jet fuel distribution system over a 5-year period were estimated between \$250,000 and \$6,000,000. The amounts, together with the \$38 million per year in purchases by the Air Force, would continue to have a stabilizing influence on the socioeconomics of the region.

### **4.9.2 Alternative B Impacts**

If the jet fuel distribution system is expanded to adjacent properties, tie-ins to the base infrastructure would require additional construction and an increase to costs estimated in Alternative A. The impact to the socioeconomics of the region would remain positive.

### **4.9.3 Alternative C Impacts (No Action Alternative)**

Projects would be conducted as needed and costs over a 5-year period would be within estimates of Alternative A. Impacts to socioeconomics would remain unchanged.

#### **4.10 Infrastructure**

Maintenance, upgrades, construction, and expansion of the pipeline and hydrant fueling stations would affect major access roads on base with the addition of truck and heavy equipment traffic. Surface excavations to lay pipelines and install hydrant units have the potential to encounter buried utility and communication lines along established easements.

##### **4.10.1 Alternative A Impacts (Proposed Action)**

Construction projects under this alternative would use haul trucks to transport alternate fuels, equipment, and building materials to and from the site using major access roads on base. Normal traffic flow could be temporarily disrupted in the vicinity of the work site. Along certain easements in the area, buried utility and communication lines could be encountered and services disrupted. No significant impact to infrastructure is anticipated when coordination with base Security Forces is arranged to ensure traffic flow is not disrupted. In addition, no significant impact to utility and communication systems are anticipated when coordination with Civil Engineering and the Communications Squadron, to locate easements in the area, is arranged prior to soil excavation.

###### **4.10.1.1 Transportation System**

The use of large trucks to transport heavy equipment along Lancaster Boulevard, Jones Road, and Wolfe Avenue could disrupt normal traffic flow in the area. Traffic delays would occur due to slow-moving trucks causing short-term delays. Road closures or the rerouting of traffic could also temporarily occur, lasting only as long as necessary to ensure personnel safety and the delivery of equipment. Early coordination with appropriate base organizations would ensure necessary safety precautions are taken with sufficient notice to base personnel.

###### **4.10.1.2 Utilities and Communication Systems**

Buried electrical conduits, fiber-optic cables, communication lines, and water service lines could be encountered during excavation and construction projects along the pipeline easement. The location of these lines has been plotted on maps and is on file at Civil Engineering and the Communications Squadron.

##### **4.10.2 Alternative A Minimization Measures (Proposed Action)**

The following measures are required or recommended to minimize potential impacts to infrastructure:

- a. All work that would require closure, rerouting, or modification of roadways, streets, or traffic shall be coordinated 15 days in advance with the Security Forces, base Fire Department, and Public Affairs Office. A current copy of the *California Manual of Traffic Controls for Construction and Maintenance Work Zones* (California Department of Transportation, 2006) shall be used as guidance for traffic signs.
- b. The proponent/contractor shall be responsible for obtaining and routing a Digging Permit.

c. Some utilities require a representative be present on site at all times when motorized construction equipment is being used within 20 feet of existing lines. The proponent/contractor shall coordinate with Civil Engineering in order to identify the location of affected lines.

#### **4.10.3 Alternative B Impacts**

Implementation of this alternative would upgrade and construct facilities at new location sites in adjacent properties. The impacts to the infrastructure would be similar to those discussed under Alternative A. No significant impact to infrastructure is anticipated when coordination with base Security Forces, to control traffic flow, and Civil Engineering and the Communications Squadron, to locate easements in the area to ensure service is not disrupted, is implemented.

#### **4.10.4 Alternative B Minimization Measures**

Minimization measures would be similar to those discussed under Alternative A.

#### **4.10.5 Alternative C Impacts (No Action Alternative)**

Implementation of this alternative would be conducted on an as-needed basis. The impacts to the infrastructure would be similar to those discussed under Alternative A. No significant impact to infrastructure is anticipated, since projects would be conducted as-needed without affecting normal traffic flow. In addition, no significant impact to utility and communication systems are anticipated when coordination with Civil Engineering and the Communications Squadron, to locate easements in the area, is implemented.

#### **4.10.6 Alternative C Minimization Measures (No Action Alternative)**

Minimization measures would be similar to those discussed under Alternative A.

### **4.11 Energy Conservation**

The jet fuel distribution system would be updated periodically to replace outmoded equipment. The newly installed equipment would incorporate technologies designed to improve operational and energy efficiency.

#### **4.11.1 Alternative A Impacts (Proposed Action)**

Implementing the proposed action would include the installation of upgraded systems. The newly installed equipment would use technologies designed to economize on energy use and improve operational efficiency. The measures could result in energy cost savings and allow the Air Force to achieve energy-reduction goals as required in PL 102-486, *Energy Policy Act of 1992*, and EO 13123, *Greening the Government through Efficient Energy Management*. A favorable impact toward energy conservation is anticipated when system upgrades are installed.

#### **4.11.2 Alternative A Minimization Measures (Proposed Action)**

No specific measures are required. It is recommended that the best available energy conservation measures be incorporated in upgrades to jet fuel distribution facilities.

#### **4.11.3 Alternative B Impacts**

Implementing this alternative would upgrade and construct facilities at newly located sites in adjacent properties. The effects to energy conservation would be similar to those discussed under Alternative A. A favorable impact to energy conservation is anticipated when system upgrades are installed.

#### **4.11.4 Alternative B Minimization Measures**

Minimization measures would be similar to those discussed under Alternative A.

#### **4.11.5 Alternative C Impacts (No Action Alternative)**

Implementation of this alternative would be conducted on an as-needed basis. The impacts to energy conservation would be similar to those discussed under Alternative A. A favorable impact to energy conservation is anticipated when system upgrades are installed.

#### **4.11.6 Alternative C Minimization Measures (No Action Alternative)**

Minimization measures would be similar to those discussed under Alternative A.

### **4.12 NEPA Mandated Analysis**

Additional environmental analyses are made to further determine potential impacts that may result if renovation and construction of the jet fuel distribution system is implemented. These analyses are based on determining the cumulative effects, unavoidable adverse effects, short-term uses versus long-term productivity of the environment, and the irreversible and irretrievable commitments of resources.

#### **4.12.1 Cumulative Effects**

Council on Environmental Quality regulations implementing *NEPA* require agencies to consider the potential for cumulative impacts of proposed actions. ‘Cumulative impact’ is defined in 40 CFR 1508.7 as “the impact on the environment, which results from the incremental impact of the action when added to other past, present (e.g., daily maintenance projects basewide, noise and air emissions from flights, and destruction of habitat), and reasonably foreseeable future actions (e.g., planned main runway overhaul and demolition of housing units). Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.”

Implementation of the proposed action would be confined to pipeline corridors, hydrant stations, storage tank sites, and fueling/defueling stations within designated areas. The proposed activities would be consistent with actions necessary to maintain the operation of these systems

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to ensure continual flow of jet fuel to the base. The activities would be conducted periodically IAW scheduled maintenance programs that would generally be noninvasive to land use. Since the proposed actions would be conducted periodically in land use areas already disturbed, significant cumulative impacts to land use would not be anticipated.

Material or debris such as nuts, bolts, screws, trash, or pieces of concrete or asphalt may be left on runways, taxiways, or aprons during routine maintenance or upgrades to the jet fuel distribution system. These objects could puncture tires, damage engines, or be blown by helicopter rotor downwash. Damage to aircraft and risk to flightline personnel could be affected. However, with the continued implementation of base standard practices in minimizing the potential for FOD, significant cumulative impacts would not be anticipated.

The release of fugitive gas vapors could have an adverse cumulative effect on the environment and personnel health and safety. Although the release of excess vapors would dissipate into the atmosphere, local conditions could cause flash fires where ventilation is poor. Inhalation of fugitive gas vapors could also occur during the maintenance of pumping units and at fueling/defueling depots. Excess inhalation of fugitive gas vapors could cause personnel health and safety concerns. Good management practices during maintenance projects would minimize adverse inhalation risks and significant accumulation of gas vapors that could be flammable. The cumulative effects of adverse gas vapor buildup would not be anticipated.

The release of GHG emissions would occur along the pipeline and during construction and maintenance activities of the jet fuel distribution system. The GHG emissions have long been associated with air pollution and the causes of global warming, according to the scientific community. In order to curb the long-term effects on the climate, the California legislature passed AB 32 to reduce global warming emissions through an enforceable statewide cap, and bring emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The bill requires the CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels. Edwards AFB Environmental Management has started to calculate GHG emission where appropriate and implement procedures to inventory GHG emission sources in compliance with AB 32. By enforcing the emissions cap, no direct, indirect, or cumulative increases in air pollution in local communities, would be anticipated.

A short-term degradation in air quality may occur during maintenance and construction activities. Fugitive dust emissions (i.e., PM<sub>10</sub>) and fuel vapors could be generated by vehicles and support equipment during excavation or grading along the pipeline easements, and during repairs to hydrant systems. Air emissions are carefully monitored by Environmental Management to ensure compliance with local air quality regulations. Management practices are in place to control production of excess O<sub>3</sub> precursors and to ensure air emissions are in *de minimis* concentrations. The proposed actions are not anticipated to have a significant cumulative impact on air emissions.

The handling of solid waste is usually addressed in contracts issued prior to maintenance or construction projects. These contracts require the contractor to reuse or recycle materials to reduce the amount of solid waste disposed of in landfills. The result would have a positive impact to solid waste management and could provide an alternate source for building material. In addition, the recycling and reuse of waste could also reduce the necessity of excavating

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nonrenewable resources, such as sand and gravel deposits. Scheduled maintenance and repair of facilities is not expected to add to the current wastestreams already being generated; therefore, significant cumulative impact is not anticipated.

Repair or replacement of fuel storage tanks or fuel pipelines could add significantly to hazardous and metal wastes. Metal waste would be recycled or resold as scrap and would not enter the base landfill. Material designated as hazardous waste would be handled according to waste management practices and would be disposed of at an off-base facility. The proposed action is not anticipated to have a significant cumulative impact on current waste generation.

Maintenance projects would not have a cumulative impact on cultural and biological resources sites. Projects would be confined to well-established pipeline corridors and previously disturbed areas that have been surveyed and cleared of sensitive resources. Projects that occur in properties adjacent to the pipeline easement and hydrant stations would be coordinated through Environmental Management to ensure sensitive resources are not accidentally encountered. Coordination with both Environmental Management Natural and Cultural Resources prior to project implementation would ensure that sensitive sites would be avoided.

Surface excavations would expose the soil to wind erosion and the generation of particulate matter. Grading could also change the natural drainage of an area, allowing soil erosion to occur from ephemeral sheet-flow during seasonal rains. Field measures would be used to minimize wind and soil erosion from sheet flow runoff. Control of soil erosion from surface run-off would also control sediment deposition into drainages. This would alleviate water quality concerns to the wastewater system. Field measures would be in place to control wind erosion and sheet flow runoff. Excess sediment deposition would be minimized and significant cumulative impacts to the environment would not be anticipated.

Periodic maintenance of the jet fuel distribution system is vital in maintaining the uninterrupted flow of jet fuel to the base. These projects would have a positive cumulative impact to on-base operations and the local economy. By maintaining the jet fuel distribution system, flight operations would continue; flight test missions would meet critical schedules; and off-base aircraft would continue using Edwards AFB for flight test and development missions, and as a refueling facility. Maintaining the jet fuel distribution system would also benefit the local economy with the purchase of goods and services from local vendors and the employment of local contract services.

### **4.12.2 Unavoidable Adverse Effects**

Unavoidable adverse effects include those that are negative, occurring regardless of any identified minimization measures. Under Alternatives A, B, and C, the following effects to environmental resources could be expected.

a. Land Use. Maintenance of jet fuel distribution facilities near the runway could produce FOD concerns affecting aircraft operations.

b. Air Quality. A short-term degradation in air quality may be experienced during maintenance of the jet fuel distribution system by vapors emitted during fueling/defueling operations and the use of equipment/vehicles.

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c. **Water Resources.** The quality of surface water runoff could be affected by sediment debris from construction sites during seasonal rains. Stormwater quality could affect the management of water quality and the requirements of the CWA.

d. **Safety and Occupational Health.** Scheduled maintenance of the fuel lines and fueling stations would upgrade facilities in need of repair. Field personnel would be exposed to possible residual fuel or fugitive vapors remaining in the pipelines. Potential explosion or flash fires could result.

e. **Exposure Hazards.** Field workers could also be exposed to excessive noise levels from aircraft flight operations while conducting fueling/defueling operations along the flightlines. In addition, field personnel would be exposed to possible ACMs, heavy-metal paints during routine equipment maintenance, heat stress conditions during summer months, venomous snakes, and potential airborne spores causing respiratory ailments.

f. **Hazardous Material.** Operating jet fuel distribution facilities would expose workers to flammable liquids.

g. **Biological and Cultural Resources.** In the adjacent properties, neither biological nor cultural resources have been fully characterized and the areas may require additional surveys. Impacts to critical habitats and sensitive sites could occur during construction activities in unsurveyed areas.

h. **Transportation System.** Traffic delays would be anticipated due to slow-moving trucks hauling pipe or equipment along existing roadways such as Lancaster Boulevard, Wolfe Avenue, and Jones Road.

i. **Utilities and Communication Systems.** Service interruptions could result during accidental penetration of utility and communication lines during the excavation and replacement of fuel pipelines.

Under Alternative B, the following effects to environmental resources could also be expected.

a. Relocating portions of the jet fuel distribution system to new locations could cause disruption in airfield operations. Portions of the fuel line would be shutdown until upgrades are completed. Flight mission schedules could be affected.

b. Relocating the distribution system to new locations could require biological and cultural resources surveys. Delays in project implementation would occur until the surveys are complete and resource sensitivities are determined.

Under Alternative C, actions would be affected by the age of the jet fuel distribution system. Projects would occur as-needed to replace or upgrade facilities. Unscheduled repairs and upgrades would result in disruption and delays to fueling/defueling operations and delivery of fuel to the flightline. Alternative means of transporting fuel would include the use of tanker trucks to fuel aircraft. The use of tanker trucks would add to delays in the fueling or defueling process, because there would be added time to travel between aircraft and storage tanks or hydrant stations. In addition, operational costs would be incurred to maintain a fleet of tanker trucks.



#### **4.12.3 Short-Term Uses versus Long-Term Productivity of the Environment**

Short-term uses of the environment include direct construction-related disturbances and impacts associated with indirect increases in working personnel and the use of equipment over a period typically less than 5 years. Long-term uses of the environment include those impacts occurring over a period of more than 5 years that would lead to a permanent resource loss.

Maintenance or construction of the jet fuel distribution system would cause only temporary disturbances. Work along the 16 miles of fuel lines and repairs to the hydrant stations and bulk storage facilities would provide permanent employment, increase economic benefit, and ensure continued use of Edwards AFB as a major flight test and development center. The periodic hydrostatic test of the fuel lines and repairs to fuel leaks would control excess air emissions and ensure the health and safety of field personnel.

Under Alternative B, the jet fuel distribution system would be relocated and facilities upgraded. The short-term effects to the environment would be similar to those described under Alternative A and occur during periodically scheduled maintenance of the jet fuel distribution system and installation activities. Upgrading systems with modern technologies would improve energy consumption for the long-term benefit of environmental sustainability.

Under the No Action Alternative, scheduled maintenance of the jet fuel distribution system would continue intermittently on an as-needed basis. Measures would be in place to ensure that product releases to the environment are prevented. Although short-term conditions may be affected, the continued long-term productivity of the environment would be preserved by implementing preventative measures.

#### **4.12.4 Irreversible and Irretrievable Commitments of Resources**

Irreversible commitments of resources is the consumption of, or adverse effect on, resources that cannot be reversed or persist for a long period of time. Irretrievable commitments of resources are those that are consumed, or affect resources for a short period of time that would be restored over time. Irreversible and irretrievable commitment of resources would result from the implementation of any of the proposed project alternatives. Implementation of the proposed project alternatives would require the commitment of labor, capital, energy, construction materials, and land resources. Labor, capital, and the use of fossil fuels would be a short-term commitment during the construction and renovation phases, and an indirect impact during the service of the project.

Under Alternative A, the long-term commitment of land resources would ensure property is available for the jet fuel distribution system. The commitment of land use for pipeline rights-of-way, hydrant stations, fuel storage facilities, and fueling/defueling locations would be available. Barring unforeseen changes in Air Force planning, the commitment of land resources to accommodate these vital systems would continue into the future.

Under Alternative B, the commitment of resources would be similar to those discussed under Alternative A. However, upgrades to facilities and construction projects would be relocated to new locations beyond the current easements and footprints of the hydrant stations, pumping

## **FINAL**

units, and storage facilities. The commitment of land use would be accommodated and continue into the future.

Under Alternative C, the No Action Alternative, the commitment of resources would be similar to those discussed under Alternative A, but limited to periodic maintenance of facilities as needed. Available labor and capital expenditure would continue to ensure the function of the jet fuel distribution system and the continual flow of jet fuel without disruption.

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95th Air Base Wing/Civil Engineering Work Management Office

AFFTC Technical Library, Building 1400, Edwards AFB, California

Edwards AFB Library, 95th Mission Support Group, Edwards AFB, California

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**APPENDIX**



**January 2009**



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**APPENDIX A**  
***CLEAN AIR ACT* CONFORMITY STATEMENT**  
**FOR CONTROL NO. 07-0485**



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**DRAFT FINAL**  
**DEPARTMENT OF THE AIR FORCE**  
**HEADQUARTERS 95TH AIR BASE WING (AFMC)**  
**EDWARDS AIR FORCE BASE CALIFORNIA**

29 May 2008

**MEMORANDUM FOR RECORD**

**FROM:** 95 ABW/EMC

5 E Popson Ave, Bldg 2650A

Edwards AFB, California 93524-1130

**SUBJECT:** *Clean Air Act* Conformity Statement for Control No. 07-0485, *Environmental Assessment for the Maintenance, Upgrade, and Construction of the Jet Fuel Distribution System, Edwards Air Force Base, California*

1. The following finding is made on the need for a conformity statement under the *Clean Air Act* with respect to the Proposed Action.

a. The Proposed Action is located in the Kern County Air Pollution Control District (KCAPCD).

b. Under regulations promulgated pursuant to the *Clean Air Act*, Title 42 United States Code (U.S.C.) Part 7506(c), the portion of the project area regulated by the KCAPCD is located in a Subpart 1 (Basic)/nonattainment area for ozone. The *de minimis* level set for this area for emissions of ozone precursor pollutants (volatile organic compounds [VOC] or nitrogen oxide [NO<sub>x</sub>]), in accordance with Title 40 Code of Federal Regulation (CFR) Part 51.853/93.153(b)(1) and KCAPCD Rule 210.7, *General Federal Conformity Rule*, is up to 100 tons per pollutant (VOC or NO<sub>x</sub>) per year per action.

c. For the KCAPCD, the 1990 regional planning baseline emission inventories for ozone precursor pollutants are included in the 1994 *California Ozone State Implementation Plan*. The baseline planning values for KCAPCD are 14,965 tons per year (tpy) and 6,205 tpy of NO<sub>x</sub> and VOC, respectively. In accordance with 40 CFR 93.153, *Environmental Protection, Applicability*, 40 CFR 93.153, the 10-percent threshold values for determination of regional significance for KCAPCD are 1,496.5 and 620.5 tpy of NO<sub>x</sub> and VOC, respectively.

d. Relevant air emissions generated during the proposed action were estimated to include 1.40 ton of NO<sub>x</sub> and 0.23 ton of VOC per year. The direct and indirect emissions, when totaled, are less than the *de minimis* amounts specified in 40 CFR 51.853/93.153(b)(1), and are less than the 10-percent threshold values for determination of regional significance; therefore, a conformity determination is not required.

2. Should you have any questions with respect to this finding and the basis for calculations, please direct them to John Vidic at (661) 277-9065.

HERBERT W. RORABACK, Chief  
Environmental Quality Division

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